December 11, 1950

STEEL

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The Magazine of Metalworking and Metalproducing

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welded on top where weld can't be dented in
OHIO

Ohio PROTECTO-WELD Magnets

MODERN welded-magnet design recognizes that steel mills give magnets particularly rough service. Ohio *Protecto-Weld* design places the weld *on top* where it is protected against damaging blows . . . where it cannot be dented in. Thus, you can disassemble an Ohio Protecto-Weld Magnet for periodic inspection without machining down the outer pole . . . without *replacing* outer pole.

Simplified maintenance! But mill superintendents also recommend Ohio Magnets because they resist moisture . . . lift bigger loads all day long . . . last years longer. The name *Protecto-Weld* identifies advanced magnet design by Ohio—*25 years a leader in magnetic materials handling.*

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MAGNETS

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New Magnetic Crane Control

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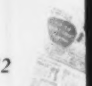
You don't have to tie up production while maintenan men file or sand the contacts on your crane controls. Th new Whiting Magnetic Control has solenoid contactor with double-break, silver-alloy contacts which never r quire cleaning or dressing. They operate indefinitely with out attention.

There are other advantages to the new Whiting Magnet Control. Bulky drum-type controllers are eliminated. Th master switches occupy very little space and give the oper tor full vision in all directions. Furthermore, as they r quire only a flick of the finger tips instead of a heavy pul the crane operator's work is less fatiguing, more accurat and safer.

Whiting Magnetic Controls are only slightly more cost than drum-type controls, and much less expensive than co ventional magnetic controls. Your new Whiting crane ca be equipped with this new magnetic control, or Whitin will convert your old manual-type cranes to this new system.

Write for New Magnetic Control Bulletin, Unit 72



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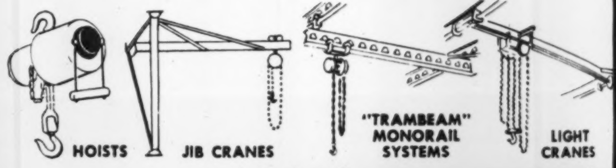

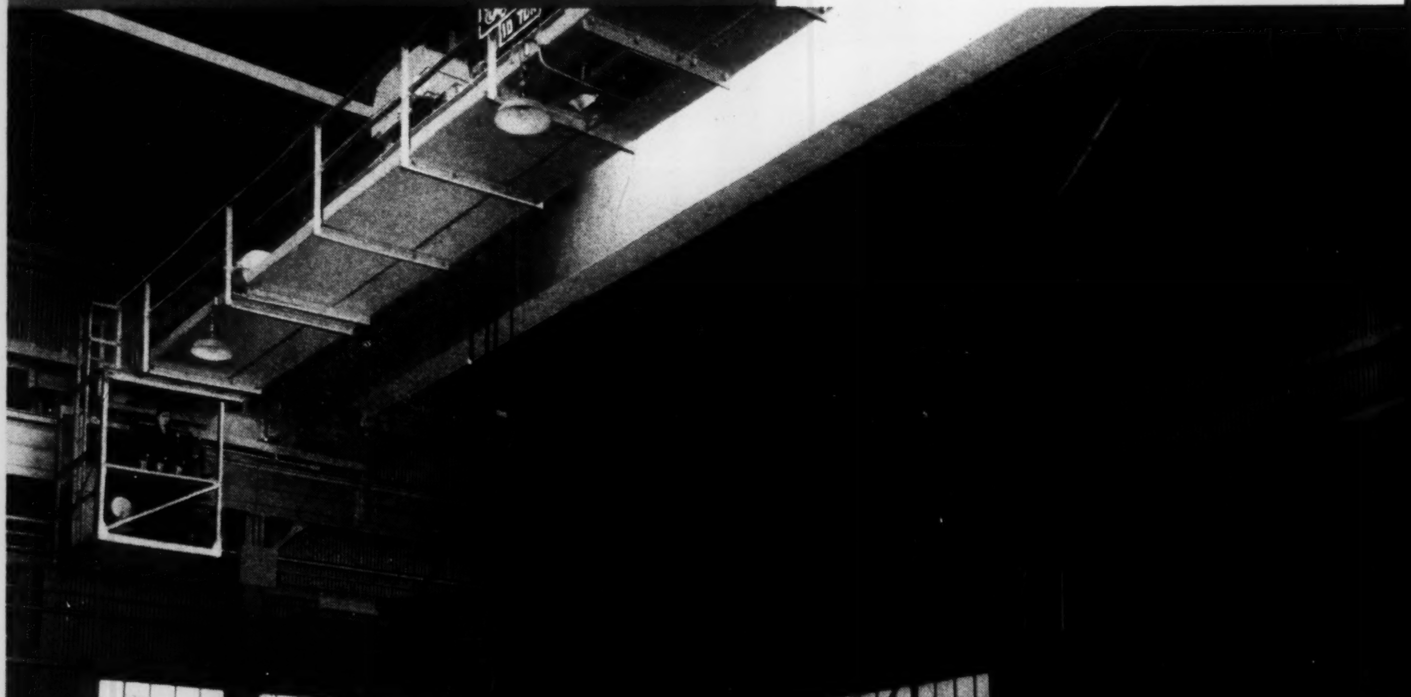

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MILL EQUIPMENT....

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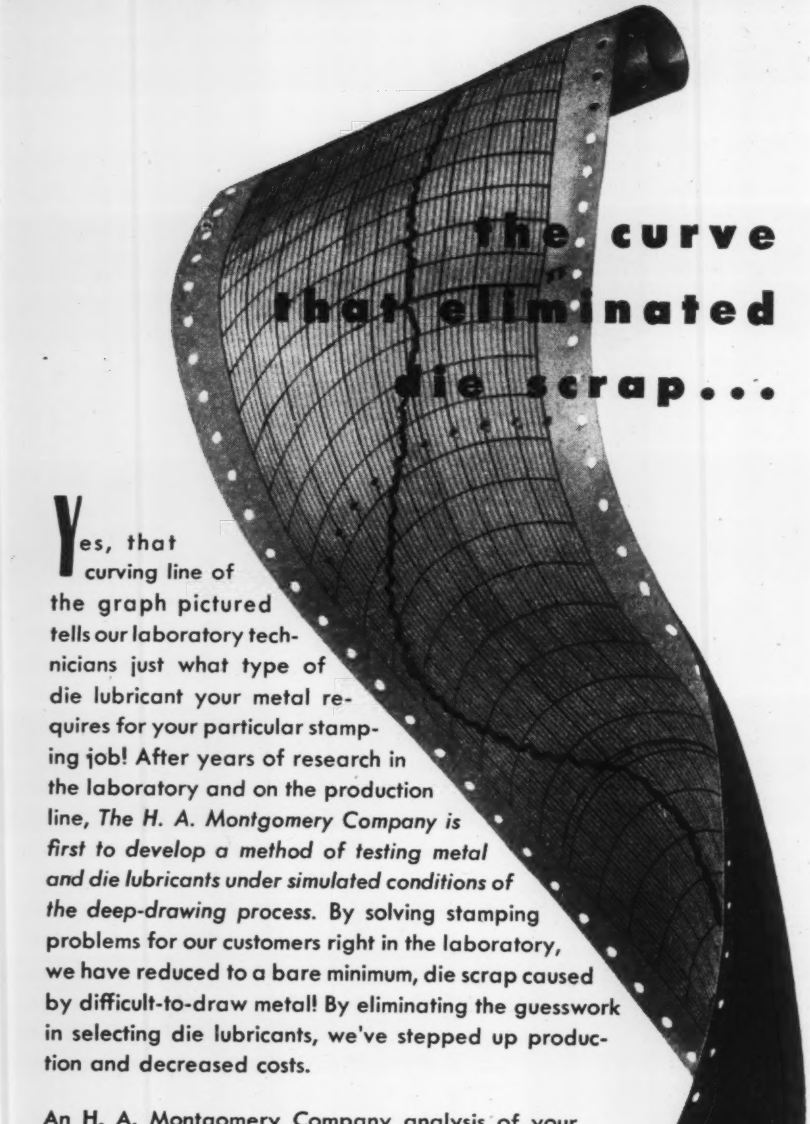
THE BLUEBOOK OF DIE LUBRICANTS
The H. A. Montgomery Company
Detroit, Michigan

the curve that eliminated die scrap...

Yes, that curving line of the graph pictured tells our laboratory technicians just what type of die lubricant your metal requires for your particular stamping job! After years of research in the laboratory and on the production line, *The H. A. Montgomery Company is first to develop a method of testing metal and die lubricants under simulated conditions of the deep-drawing process.* By solving stamping problems for our customers right in the laboratory, we have reduced to a bare minimum, die scrap caused by difficult-to-draw metal! By eliminating the guesswork in selecting die lubricants, we've stepped up production and decreased costs.

An H. A. Montgomery Company analysis of your stamping problem is now available without charge. Send a sample of the "problem metal" and your die lubricant . . . we'll test them promptly and recommend the *right* lubricant.

The H. A. Montgomery Company "Bluebook of Die Lubricants" complete with enclosed small samples will be mailed free to purchasing executives, plant managers, production engineers, etc., requesting a copy on your business letterhead.

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LETTERS
TO THE EDITORS

Your Nickel's Worth

May I ask about your figures of 1.06 pounds of nickel used in the particular car mentioned in your Mirrors of Motordom column appearing in the Oct. 23 issue?

Have you further details regarding this figure, i. e., how it is distributed between alloys, plating and so forth. The figure seems rather small for total nickel. Is it possible that it refers to nickel alloy steels and does not include the plated nickel?

Robert J. McKay, Chemical Engineer
International Nickel Co. Inc., New York, N. Y.

• *The figure of 1.06 pounds of nickel in a selected, but un-named, General Motors passenger car is low, although the amount shown in the breakdown was provided by the GM Research Laboratories. We are reasonably sure it refers only to nickel as a steel alloying element and not in the form of plating, as the typical pre-Korea Chevrolet required at least 3.5 pounds for plating alone.*

We Mean Widely Read

The undersigned wishes to express his appreciation for the editorial material sent our school department. It is proving very helpful to our students in the study of machine shop practice and sheet metal work.

H. R. Wallis, Educational Advisor
Division of Rehabilitation, Idaho
State Penitentiary, Boise, Idaho

Who Makes It Dept.

Will you please advise us who manufactures magnetic steel of the Alnico type?

Fred Gerson
Akron Hardware Mfg. Corp., Woodside, N. Y.

• *Alnico is made in seven grades, each with a different combination of the basic ingredients aluminum, nickel and cobalt. Sintered and cast grades available from: General Electric Co., Schenectady, N. Y.; Carboloy Co. Inc., Detroit, Mich.; Arnold Engineering Co., Marengo, Ill.; Indiana Products Co., Chicago, Ill. Cast grades: Simonds Saw & Steel Co., Fitchburg, Mass.; Belden Mfg. Co., Chicago, Ill.; Taylor Wharton Iron & Steel Co., High Bridge, N. J.; Thomas & Skinner Steel Products Co., Indianapolis, Ind. Sintered grades only: Stackpole Carbon Co., St. Marys, Pa.*

Add: Election

You have expressed in words so perfectly what so many of us have felt in regard to the recent election day results, that I want to add my personal appreciation to those I am sure you will receive from a great number of Americans.

Walter E. Smith, President
Rogers & Smith, Chicago, Ill.

Diesel Training Schools

They're GMC's answer to the shortage of trained mechanics to service diesel units

TREMENDOUSLY rapid dieselization of the trucking industry has brought about a serious shortage of trained mechanics to service diesel units throughout the country.

Diesel truck usage has increased 600 per cent since 1946 but unless the training shortage is licked, there will be a strong drawback to increased sales.

GMC Truck & Coach Division, General Motors Corp., expects to eliminate the stumbling block and permit continuation of the trend toward diesels by its training program geared to turn out 1500 diesel mechanics a year.

Diesel vs. the Gasoline Engine—John E. Johnson, general sales manager of the truck division, describes the advantages of diesels over gasoline engines as: Utilize low-price fuel; require less maintenance; give high efficiency and fast performance. These are the reasons for GMC's increase in output of diesel trucks in the 19,000 pound gross vehicle weight class from 1 per cent of its truck production in 1946 to 24 per cent in 1950. The division currently is producing 28 per cent of the total output of diesel trucks in this weight class. GMC regards proper facilities for servicing the units as a basic obligation it has as a manufacturer.

Its diesel mechanics school will take to wheels this week bringing complete classrooms and engine laboratories to GMC dealers in the nation.

The Cost: $25,000 Fully Equipped—Four mobile training units, each costing about $25,000 fully equipped, will take the course to the students who will be dealer-selected experienced mechanics.

The novel training set-up, aimed at tripling the capacity of GMC's diesel schooling program, previously carried on in permanent facilities at Oakland, Calif., and Flint, Mich., will permit the outturn of enough diesel mechanics to expand GMC's nationwide system of 350 diesel service stations to 1000 stations.

Each class is being limited to 12 students. In five days with guidance of two instructors the students learn that diesel engine operation and maintenance is not as intricate as it's cracked up to be. Using movies, slides and other visual presentation gimmicks, plus two working engines and two cut-aways of complete engines, GMC has also come up with some teaching techniques that would make some schoolteachers sit up and take notice. Most evident of these is using different colors to match the component parts of the engine's four "flows"—fuel, water, air and lubrication—with these systems in the cut-away engines.

GMC DIESEL SERVICE TRAINING
AIR SYSTEM
CYLINDER HEAD
TOUCH

SELF-CONTAINED DIESEL TRAINING CENTER
. . . diesel training isn't as rough as it's cracked up to be

Second Thought

NO INCOME TAX DEDUCTIONS may be taken for fines paid by truck operators for violating state laws prescribing maximum weights or size of trucks, says George J. Schoeneman, commissioner of internal revenue.

This ruling revokes a previous one, made in 1942, at which time truck fines were comparable to tolls rather than penal fines. Additional information brought to the attention of the bureau made it necessary to indicate the new ruling. So income tax deductions will not be allowed for fines incurred after the first of December.

'Motors on Parade' Film

To show the importance of the electric motor to industry, transportation, home and the farm and how the motors are made Delco Products Division of General Motors Corp. had the Jam Handy Corp. produce a 16 mm sound film of 26 minutes running time.

Although the movie is primarily for Delco's customers and prospects, including equipment manufacturers, industrial motor buyers and the replacement market, secondary audiences are other business firms, school groups, foremen's groups and civic and professional organizations.

There's no charge for the film. It may be scheduled by writing to the Public Relations Department, Delco Products Division, GM, 329 E. First St., Dayton 1, O.

Lignite Laboratory Is Ready

Completed and ready for occupancy is a new $750,000 Bureau of Mines lignite laboratory at Grand Forks, N. D., where experiments will be conducted to increase use of the nation's enormous lignite reserves. The first laboratory to be built exclusively for lignite research, the building provides facilities for studying methods of increasing the use of lignite for power, heat and other purposes.

Slag Association Elects Officers

National Slag Association, Washington, elected the following officers for the year 1951 at its annual meeting held in Washington Nov. 30: President, E. L. Flad, manager slag division, Carnegie-Illinois Steel Corp., Pittsburgh; vice president, C. A. Barinowski, vice president, Birmingham Slag Co., Birmingham; managing director, E. W. Bauman, Washington; and treasurer, W. S. Shaw, Washington.

Four members at large of NSA's executive committee are: R. O. Dierker, president, Duquesne Slag Products Co., Pittsburgh; G. A. Mattison Jr., president, Woodstock Slag Corp., Birmingham; L. E. McDermut, president, Illinois Slag & Ballast Co., Chicago; and G. D. Scheuneman, manager, American Materials Corp., Hamilton, O.

Belgium . . . Expects Peak Industrial Production in 1951

Output may exceed the 1948 peak as the Korean war and rearmaments spur industry. Metalworking has been working at or near capacity since last July

BELGIAN business in 1951 may bounce back beyond 1948 peak production points as the Korean war and rearmament spur industry. In the first half of 1950, steel and steel consuming industries weathered a depression, but since July metalworking has been humming.

Up and Down — After having reached a high level of production right after the war, the activity of the steel industry began to slow down from the middle of 1949. Output of steel ingots and castings dropped almost constantly from the peak of 457,765 net tons in March, 1949, to November, 1949, with 302,170 tons. From then on, production began to increase again and, in September, 1950, it reached 405,273 tons. For the whole of 1950, the production of basic steel will be around 4,150,000 net tons—almost as much as in 1949.

Belgium experienced little difficulty in 1950 in obtaining raw materials, but the cost of producing Belgian coal is high, and affects the cost of producing steel.

Home Grown—Steel companies are building new furnaces and plants. The Ferblatil group, which turns out most of the sheets and strip in Belgium will soon be producing commercially in their new plants. Esperance-Longdoz, Ougree-Marihaye, Cockerill and others have built new works.

Belgian money was used to finance most of that expansion; Marshall aid has been used sparingly.

Indicator—The fluctuations in industrial employment show the economic roller coaster Belgium has been riding. These figures relate to the Fabrimetal group, which is by far the largest consumer of steel in the home market:

June 1948	192,000 men employed
June 1949	171,000 men employed
June 1950	147,000 men employed
Sept. 1950	152,187 men employed

In the **gray iron foundries** the situation is good. Most of the members of the Fabrimetal group are users of iron castings, and the general metalworking improvement is reflected in the activities of the foundries. Until the middle of the year, the foundries were working almost on a day-to-day basis, but employment will be up from now on.

Cold rolling, wire products and extruded products industries have been active since the end of the war. Their shipments represent about 8 per cent of the value of the total shipments of the Fabrimetal group. Throughout 1950 those industries have been operating almost to capacity. They export half their production. The United States is one of their best customers.

The **sheet work and building accessories** group was depressed at the beginning of the year, but the position improved from July on, and more people were employed in these industries than in 1949. Orders booked at the end of the year were 16 per cent above the volume of shipments.

The **bridge work and construction** group was active during the whole year. Many bridges destroyed during the war were rebuilt. The modernization and expansion of works and factories has been a source of activity.

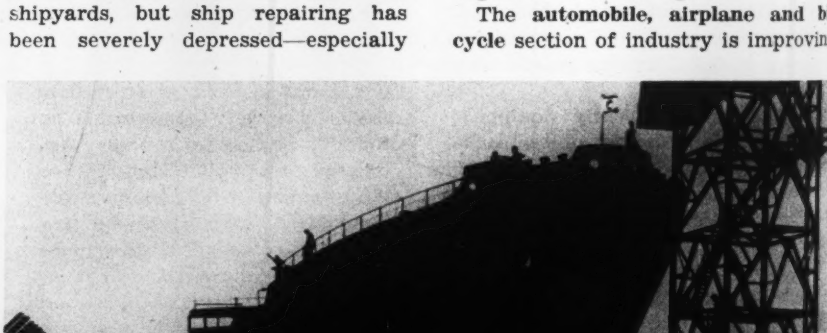
Three years ago the **shipbuilding and repairing** industry was employing some 19,000 men, but in September 1950, this figure dropped to 10,181. In shipbuilding, sufficient contracts were received to maintain a certain amount of activity in the shipyards, but ship repairing has been severely depressed—especially since the devaluation of currencies, which the Belgian franc did not entirely follow.

The number of people employed in the works operating for the **railroads** was, at the end of the year, about one third of the number for 1948. The only hopeful prospect for this section of industry is that the Societe Nationale des Chemins de Fer Belges, the nationalized railroad corporation, shall place contracts for new equipment. Much Belgian railroad equipment needs replacement.

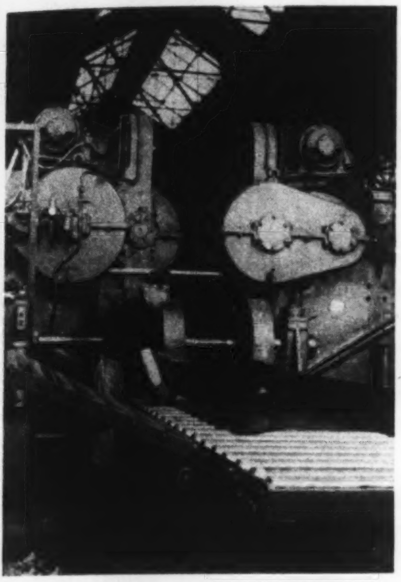
As the railroads go, so go the **steel foundries** whose major business is the manufacture of rolling stock and other rail equipment. Since the middle of 1949 and through 1950, the railroads have been pinching their francs and employment in the steel foundries decreased from an average of 5,660 in 1948 to 4,083 in September 1950. At the end of the year, the volume of orders booked each month was still below the tonnages being delivered.

Since **forging, stamping, spring and bolt making** companies depend largely on the national railroads for orders, their situation during the first half of the year was unsatisfactory, but it improved in the latter part of the year. The average number of workers employed in this group in 1948 was 8,948, in 1949 it was 8,174, but it dropped to 6,347 in the first six months of 1950, from which time it began to increase again.

The **automobile, airplane and bicycle** section of industry is improving



LAUNCHING THE THORSHEIMER AT COCKERILL YARDS IN HOBOKEN, BELGIUM
. . . sufficient contracts for just a certain amount of activity



OUGREE-MARIHAYE PLANT
. . . other plants were built

from year to year. Both orders on the books and deliveries are increasing, and productivity is increasing also, as shown by the relative decrease in the number of men employed. Bicycle makers are particularly active; four times more cycles were exported in 1950 than in 1949.

The market for **motors, compressors and hydraulics** is dwindling, especially for diesel engines. Several export markets have been closed to Belgian manufacturers, and competition from imported machines in the home market is strong.

The level of activity in the **machine tool** industry has been practically stable since the end of 1949, but a slight decrease in business had set in since 1947. There is strong competition in the home market from Western Germany, Britain and France.

The **textile machinery** field has been progressing since 1947. Belgium now ranks as the fifth producing country of textile machinery. Manufacturers have improved their techniques and modernized their plant, and are now making machines of latest design.

Following right after a slight decrease of demand in the middle of 1949, activities have again become very satisfactory.

Electrical Construction is the most important section of the Fabrimetal group. The electrical industry employed 26,971 men in September, 1950, slightly less than in 1947. In the field of capital goods the demand has remained satisfactory, both at home and in export markets; a decrease has come in consumption goods since the middle of 1949.

Capital Expansions Will Boost Steel Output in . . . *France*

The U. S. can expect to receive 400,000 to 500,000 tons of French steel in 1951, about double the 1950 receipts. ECA financing helps

FRANCE in 1951 will reap full benefits of its postwar capital expansion program, particularly in steel. The U.S. can expect to receive 400,000 to 500,000 tons of French iron and steel products next year, compared with about 220,000 tons in 1950.

In 1950 France, including the Saar, became the world's leading steel exporter, shipping about 4 million tons. Belgium is in second place. French steel exports helped the nation straighten out its foreign trade. Her exports to the U.S. in September totaled $12 million, while imports were $18.5 million. That's still an adverse balance, but it's the lowest since the end of World War II and is about the same as before the war. Exports plus the record 3 million tourists that visited France in 1950 enabled the Bank of France to increase its dollar and foreign reserves by $350 million.

Home To Roost—ECA financing of French steel projects will pay off in 1951 when the French will be able to double their steel shipments to the U.S. The first modern cold strip mill to be installed in France was completed in 1950 at the Usinor works in Montataire, 40 miles from Paris. A continuous hot mill to supply Montataire with coils is being completed at Denain and should begin to operate next spring. When the two facilities are in full operation, France will have a surplus of high grade sheets for export.

The nation has sufficient plant capacity to augment her output of steel, but she is still troubled with a scarcity of coke and scrap. Research programs are evolving a solution to the coke problem. Eventually French coal, with the help of new technical processes, will be satisfactory in production of metallurgical coke. The scrap problem, though, is still unsolved.

ON THESE pages are two more articles in a series on the economic pasts, presents and futures of the major Western European countries. On Dec. 4 we wrote about Italy and Sweden. Next week, Dec. 18, we discuss Great Britain and Western Germany. A summary of the situation in Western Europe will appear Dec. 25. Complete iron and steel statistics for all industrial nations of the world will be carried in our 1951 Metalworking Yearbook issue, Jan. 1.

Bigger and Bigger—France produced an estimated 330,000 cars and trucks in 1950, compared with 285,000 in 1949 and 232,300 in 1938. The industry's prospects for 1951 are even better as export markets improve.

French machine tool manufacturers were particularly active in 1950 and expect to be even more so in 1951. They are striving now to get a better toe-hold in South America and even North America as U.S. builders continue to be swamped with domestic orders.

Exports Again—Paris is the center of the nation's machine tool industry which consists of about 200 companies employing 22,000. It produced $71.4 million worth of tools in 1950. About $9.3 million of that goes to exports. Belgium and Luxemburg are important buyers in Europe, Argentina in South America.

Manufacturers of railroad equipment did well in 1950, and orders on hand forecast a good year in 1951. In the first seven months of 1950, the industry produced 46 steam locomotives, 66 tenders, 81 railroad tractors, 47 diesel locomotives, 149 passenger cars and 6926 freight cars.

Water-Logged—Shipbuilding is one of the few French industries that did poorly in 1950 and whose prospects for 1951 are not much better. Hopes that the French rearmament program would bring some work to the shipyards was dashed by the decision of the Atlantic Pact committee to place naval defense in the hands of Great Britain and the U.S., giving France the task of rebuilding its land army and anti-submarine defenses. French shipyards may pick up some merchant construction in 1951.

The Korean war and ECA-financed capital expansions were tremendous spurs to the French economy in 1950 and will continue to be in 1951. But another factor is perhaps even more important: France in 1951 will reap psychological benefits from its piece of economic statesmanship, the Schuman plan to pool coal and steel resources of Western Europe. Korean events have shifted world attention from the French proposal, but France has gone on record for an economic climate more favorable to industry.

SEVEN STRONG REASONS

Appreciation of its many advantages explains the trend to N-A-X HIGH-TENSILE steel by manufacturers of commercial vehicles.

HIGH STRENGTH

HIGH FATIGUE RESISTANCE

GOOD FORMABILITY

FINER GRAIN STRUCTURE

GREAT IMPACT TOUGHNESS

EXCELLENT WELDABILITY

HIGH CORROSION RESISTANCE

MAKE A TON OF SHEET STEEL GO FARTHER

Specify–

N·A·X

HIGH-TENSILE STEEL

GREAT LAKES STEEL CORPORATION

N-A-X Alloy Division, Ecorse, Detroit 29, Michigan

NATIONAL STEEL CORPORATION

By H. C. TUTTLE *Detroit Editor, STEEL*

Mirrors of Motordom

Tonnage-wise, increased steel prices aren't affecting car prices much. But the cumulative effect on component costs and things like a 300 per cent hike in rubber are

DETROIT

IT WAS A foregone conclusion that higher steel wages meant higher steel prices which meant higher auto costs. But when the auto industry started to push its pencils to find out how much the actual increase in steel costs meant to the price tag on an automobile, it found that tonnage-wise it amounts to about $9 to $10 per car. That's generally the way it works out. But that's peanuts compared to the cost of premium steel that the automakers buy at every opportunity.

The Cumulative Effect — But it won't be the increase in steel costs that will push up the price on new cars—it'll be the cumulative effect of all the increases in the cost components.

Doing pretty much as big steel did when it came out with higher prices that covered only the increase in labor costs, General Motors is advancing the average weighted prices of its new models by "something less than 5 per cent." President C. E. Wilson made this long-awaited pronouncement last week.

(Eight hours later Ford announced similar 5.7 per cent boosts ranging from $87.50 on Ford to $165.00 on Lincoln. Production costs have increased at a rate of $103 million since June.)

"During the calendar year of 1950 wages have risen substantially and basic commodities such as rubber, copper, tin, lead and zinc have skyrocketed in price," Mr. Wilson said, but "no previous upward adjustment in prices of our automobiles has been made since the fall of 1948." Fact is three price reductions were made in the last 20 months as the result of the cost-of-living wage tie-in.

The items going into car prices which have risen during the year, he delineates thus: Steel up 7 per cent, aluminum 11.8, nickel 20, copper 32.4, lead 41.7, cotton 44.6, tin 66.9, zinc 68.5, wool 72.4, and rubber 300 per cent. During 1950, he adds, our costs for wages, pensions and other employee benefits have increased 11.13 per cent.

Three cents more an hour will be paid to approximately 600,000 workers who are covered by escalator clauses in UAW-CIO contracts across the country. The increases, to be included in most cases in the first pay envelopes in December, reflect the advance in the consumers price index of the Bureau of Labor Statistics between July and October. Some 75 separate companies have this contract provision with UAW-CIO represented workers.

Largest employer whose workers are covered is General Motors with 357,000 hourly rated people. An additional 80,000 salaried employees receive a cost-of-living allowance.

Improved efficiency and investment in new machinery and facilities are part of the answer to how the increased costs were counteracted without a correspondingly large increase in car prices. "Continuous operations free from strikes and other interruptions" also helped, said Wilson.

GM's 88 — Including the average "less than 5 per cent" increase on this year's jobs, "prices of our 1951 passenger cars represent an increase over prewar levels of 88 per cent," he noted.

Maybe you, too, thought you are paying more for a car now than you did ten years ago. Not so, says David A. Wallace, president of Chrysler Division, Chrysler Corp. Just compare the number of paychecks you need to cover the price of the new car, he advises, with the number that was necessary then. Or if you are a cattle man, it will interest you to know that proceeds from the sale of nine head bought one westerner his new car. The last one he bought in 1940 was paid for with 24 of these walking sirloins.

Auto Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	721,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	746,771	604,351
August	842,304	678,092
September	760,808	657,073
October	804,553*	601,021
November	633 356*	474,731
December	......	384,318

Weekly Estimates

Week Ended	1950	1949
Nov. 11	161,113	114,856
Nov. 18	122,498	115,152
Nov. 25	122,683	76,026
Dec. 2	151,004	72,994
Dec. 9	137,000	52,514

Estimates by Ward's Automotive Reports

* Preliminary.

Sign of the Indian Head

If the "Indian sign" is something you don't want, steer clear of Pontiac in 1951. The new models have the famous Indian head all over them—from the stylized study of the hood ornament to medallions on the trailing edge of the rear fenders, and several places in between. These, of course, are strictly incidental to the overall styling changes and mechancial improvements which distinguish the new model, but Pontiac is making darn sure every silhouette of an Indian head you see makes you think of its car. It should work at least as well as a string around the finger.

Silvery Look for Anniversary—It is doubtful that the new radiator grille has any pronounced lift characteristics but from the oncoming view it looks much like the gull wings of a plane. Overall effect of the grille changes is a broadening of the frontal lines, as contrasted with last year's design which accentuated the vertical. From front, side, rear and even from above, Pontiac is busy promoting its "silver streak" design, and probably because this is its silver anniversary model, certainly not because the materials are easy to obtain, it has lavished on the chromium trim.

Twenty-five years have seen a lot of Pontiacs roll out. Its 1926 model sales of 76,695 cars established a record for first-year cars. During 1950 that many Pontiacs were made every two months. What happens in 1951 is a matter of no small amount of concern, but of one thing Pontiac is relatively certain—its 1951s will match or surpass the popularity of the 50s, even if its output of them doesn't.

For Longer Life—Sixteen mechanical improvements are incorporated in the new design, many of which were made with an eye to longer life and

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

easier servicing of the car. These features may be increasingly important if owners are going to be keeping their cars longer, as seems very likely at this writing.

Rear spring is 6 inches longer with thicker and fewer leaves designed to improve the ride on bumpy roads.

In the revised electrical system field coils of the starter motor are plastic-insulated for better protection against moisture; generator capacity rating is now 40 amperes against 35 formerly; body wiring harness has a cloth braid protective covering; frictional resistance in the distributor has been lessened. In the six cylinder engine a bumper, consisting of a synthetic rubber pad, has been added to dampen timing chain vibration and noise.

Chevrolet Hikes Skirts

Chevrolet also sports more than just a face lifting with its 1951 model. It hikes up its skirt a little bit. Aside from a newly designed radiator grille which achieves the "massive" look the stylists are so concerned about these days, sleekness of the car is enhanced by raising the crown of the rear fenders, squaring them off at the back and incorporating in them at their peak the tail and stop lights. More liberal use of chrome and stainless steel trim in the deluxe series immediately hits the nickel-conscious eye. The molding strip which starts above the wheel opening in the front fender and extends back into the doors is wider and correspondingly flashier. Lower two of the three horizontal bars which comprise the grille go farther out into the fenders to enclose the parking lamps.

Jumbo Drum—It is more the mechanical improvements, rather than styling changes, that make the new Chevrolet substantially different. Featured change is "jumbo drum" brakes. Self-energizing, these aim to deliver safer and quicker stops with less pedal pressure, 25 per cent less at given speeds, say Chevrolet experts.

Part of the improvement in braking action comes from a 15 per cent increase in the lining area of the front brakes. Bonded linings and the hydraulic system of actuation are not changed. Design of the brakes themselves, though, is new. Each brake has a wheel cylinder and two shoes. As the brakes are applied the pistons in the wheel cylinder, acting on the brake shoe through connecting links, force both shoes against the drum. With the shoes floating free in the brake, friction between the shoes and the rotating drum turns the entire assembly in the direction of wheel rotation.

Small Amount of Effort—The front brake shoe moves downward while the back, secondary, shoe is carried upward until its upper end strikes a fixed anchor pin. Friction between the rotating drum and the stationary shoes tends to roll both shoes toward the drum with increasing pressure. This self-actuating force acting on both brake shoes in each wheel provides a large amount of braking with relatively small driver effort. A better brake seal and lessened possibility of grabbing are also features of the new design.

Other mechanical improvements include: Increase in steering gear ratio, relocated brake pedals, reduced vibration through greater torque tube rigidity and a new method of propeller shaft balancing. Outside diameter of the torque tube is increased to 3¼ inches, while the tube's wall thickness is reduced to hold the weight about unchanged. The propeller shaft ends were redesigned to accommodate balancing weights. In manufacture, the propeller shaft, bearings, pinion and pin assembly is now balanced within a quarter inch-ounce.

180 Different Ford Trucks

More comfort and convenience for drivers, lower operating costs and adaptability to more jobs were what designers and engineers sought to build into Ford trucks for 1951. There are more than 180 different models. Topping the list of new features is a "5-star extra" cab which is soundproof with undercoating on the floor, spray-on material on doors and back panel, plus roof insulation comprising a 1½-inch glass wool pad covered with a perforated acoustic board. Interior includes full-length passenger car type door trim with arm rests on both doors, two sun visors, cigar lighter, glove compartment lock, dome light with automatic door switches, locks on both doors and twin matched horns. Few of these niceties ever have been supplied on trucks before.

Cast spoke wheel with demountable rims to provide interchangeability with trailer wheels are standard on two of the Ford truck series.

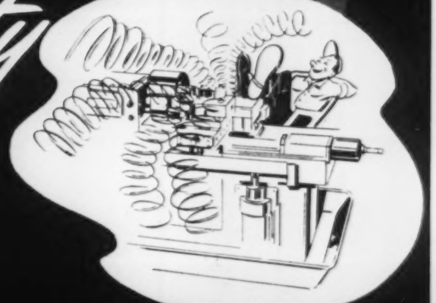
Engines have been improved for better economy and quieter operation. All now have chrome top piston rings, high-lift camshafts, nitrided stems on exhaust valves, and semirotating valves and valve spring retainers. Chrome plate has been taken off truck radiator grilles, finish now being the silver-like paint Ford calls "argent."

ONE OF 14: The Styleline DeLuxe four-door sedan is one of 14 models introduced by Chevrolet as its passenger car line for 1951. Radiator grilles have been simplified, decorative molding lowered and rear fender crowns raised

ONE OF 180: The Ford series F-8 "Big Job" for 1951 is built to handle the toughest trucking jobs. A "5-Star Extra" cab is optional on the 1951 fleet. Cab has special ornamentation. "Argent" finish is used on the grille

Extra Toughness

Better Machinability



· LATROBE ·

DESEGATIZED BRAND*

HIGH SPEED STEELS

HI CARBON - HI CHROME DIE STEELS

Fewer Heat Treat Losses

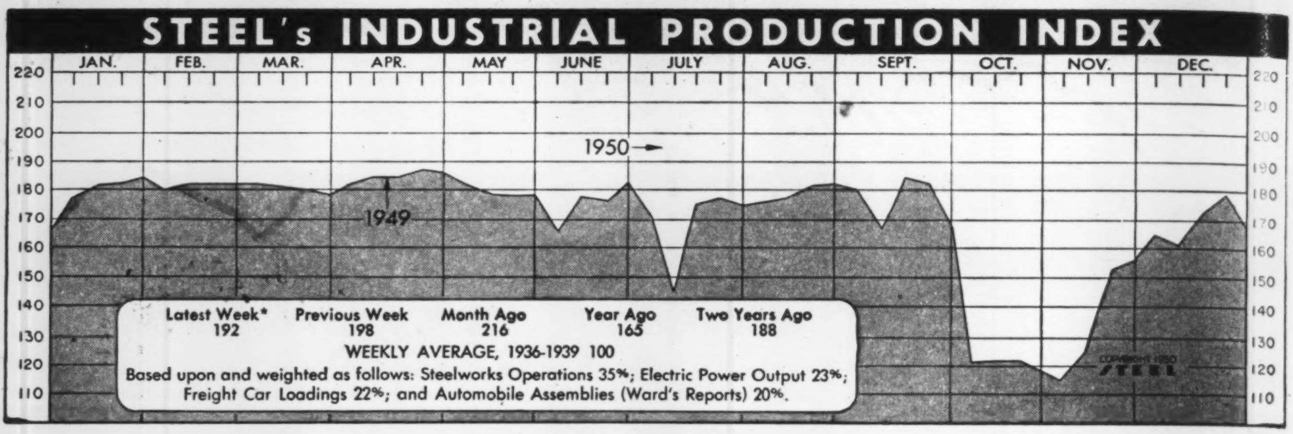
[illegible]

LATROBE ELECTRIC STEEL COMPANY

LATROBE, PENNSYLVANIA

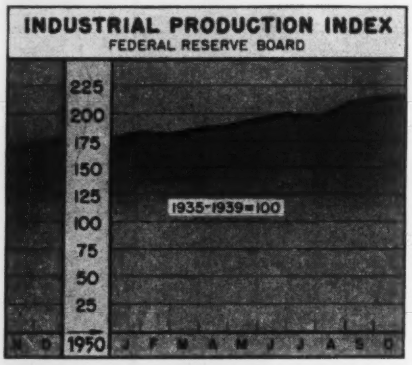
Branch Offices and Warehouses
located in principal cities.

*[illegible] Registered U. S. Pat. Office.



Week ended Dec. 2 (preliminary).

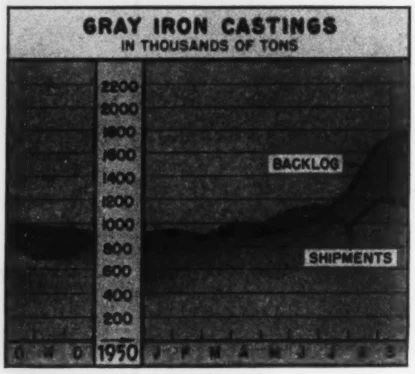
Charts—Copyright 1950, STEEL



Industrial Production Index

	Total Production 1950	Total Production 1949	Iron, Steel 1950	Iron, Steel 1949	Non-ferrous 1950	Non-ferrous 1949
Jan. ..	183	191	203	228	179	184
Feb. ..	181	189	201	232	188	185
Mar. .	187	184	205	233	199	183
Apr. ..	190	179	222	219	196	168
May ..	195	174	226	204	195	145
June .	199	169	231	177	207	132
July ..	196	161	228	156	202	128
Aug. .	209	170	236	178	212	141
Sept. .	212	174	245	179	218	157
Oct. ..	215	166	254	103	223	164
Nov. .	...	173	...	144	...	163
Dec. ..	...	180	...	198	...	165
Avg. .	...	176	...	187	...	160

Federal Reserve Board

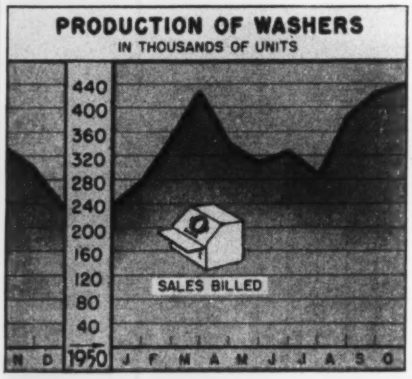


Gray Iron Castings

Thousands of Net Tons

	Shipments 1950	Shipments 1949	Backlogs* 1950	Backlogs* 1949
Jan.	913	1,040	914	2,065
Feb.	864	987	873	1,857
Mar.	996	1,075	922	1,639
Apr.	981	929	922	1,446
May	1,095	867	978	1,243
June	1,136	906	1,040	1,087
July	961	697	1,287	1,032
Aug.	1,202	872	1,670	1,048
Sept. ...	1,159	881	1,794	980
Oct.	...	716	...	955
Nov. ...	...	719	...	939
Dec.	...	862	...	892
Total ...	...	10,551		

* For sale. Bureau of the Census



Household Washers

Sales Billed—Units

	1950	1949	1948
Jan.	275,576	172,400	360,445
Feb.	342,967	201,300	367,909
Mar.	423,802	242,500	408,512
Apr.	333,072	192,500	402,257
May	304,640	211,700	377,895
June	325,217	260,700	392,496
July	282,261	200,900	326,181
Aug.	381,452	323,789	362,169
Sept.	424,043	357,281	433,919
Oct.	439,924	333,728	382,400
Nov.	......	298,717	319,300
Dec.	......	237,591	183,700
Totals ...	......	3,033,106	4,317,183

American Home Laundry Mfrs. Assoc.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction	Nov.27	Gear Sales	Dec.4	Refrigerators	Dec.4
Durable Goods	Nov.27	Ironers	Nov.13	Steel Forgings	Nov.20
Employ. Metalwkg.	Nov.27	Machine Tools	Nov.27	Steel Shipments	Nov.27
Employ. Steel	Nov.20	Malleable Iron	Oct.30	Vacuum Cleaners	Dec.4
Fdry. Equip. Orders	Nov.6	Pump Orders	Nov.13	Steel Castings	Nov.20
Freight Cars	Nov.20	Radio, TV	Aug.14	Wages, Metalwkg.	Nov.27
Furnaces, Indus.	Nov.20	Ranges, Elec.	Dec.4	Water Heaters	Nov.13
Furnaces, W. Air	Nov.20	Ranges, Gas	Dec.4		

FRB Index Moves Higher

Defense activity pushed Federal Reserve Board's industrial production index to 215 per cent of the 1935-1939 average in October from 212 in September. A year earlier the index stood at 166. The board says October's rise mainly reflects further substantial increases in activity at steel mills, metal fabricating and machinery plants.

In addition to the steelmaking record month, the board says, there was a further large expansion in output of metalworking and general industrial machinery, freight cars and most types of producers' equipment. Auto outturn and most other consumer durables were near or above record levels.

The board estimated November's index would be at about the same level as in October but its estimate was prepared before storms put a crimp in metalworking activity at eastern and midwestern cities.

Record Month for Washers

All records for factory sales of standard-size household washers were broken in October, the American Home Laundry Manufacturers' Association announces. That month sales totaled 439,924 units and edged past the previous high of 433,919 established in September, 1948. October sales were 3.7 per cent higher than 424,043 in September and exceeded 333,728 in October, 1949, by 31.8 per cent.

Tumbler dryer sales in October totaled 28,882 units, 8 per cent higher than the 31,399 dryers sold in the previous month and 83.3 per cent higher than the 15,760 units sold in October, 1949.

Ironer factory sales in October aggregated 47,500, a 14.7 per cent increase over 41,400 sold the previous month and 31.8 per cent above October a year ago.

The Business Trend

Growing seriousness of the foreign situation means the time-table for more and stricter controls on business will be stepped up a notch

TRANSITION from a peacetime to a garrison economy will be speeded up by bad news from the Orient. Manufacturers who petitioned the government for temporary relief so the shift to military production could be made without serious dislocations in output and employment have little chance of success. There is more talk of wartime mobilization and accompanying controls and while it is still mostly talk, it's a cinch bet that it will be translated into action.

Certain measures will not be popular when they are put into effect so there is the tendency to put them off as long as possible. Those who contend we have already dallied too long and have to act now are gaining in support, however, and some politically unpopular measures are not too far from enactment. Wage and price controls, particularly the former, are in this category. Creeping inflation has grown and is already walking, the government may have to take action to keep it from breaking into a trot.

Other controls including a tighter curb on non-defense building and the Controlled Materials Plan appear on the horizon. Manly Fleishmann, NPA's general counsel, was rebuked by NSRB Chairman Symington for speaking out of turn (STEEL, Nov. 20, p. 74) about a CMP but it looks as if he called the turn accurately.

Industry's losing bout with the weather in the week ended Dec. 2 pushed the index down 6 points from the level recorded in the preceding week to a preliminary 192 per cent of the 1936-1939 average, lowest point since midyear. Carloadings and steelmaking were hardest hit and wiped out automotive gains.

Steel Comes Back . . .

Recovery in steel mills was rapid last week but the steelmaking rate didn't quite get up to the production rate maintained before the weather-enforced cutback. In the week ended Dec. 2 the steelmaking rate was down to 81.5 per cent of capacity, lowest point since the week ended Mar. 11. The decline wiped out the chance that a new ingot record might be set despite a shorter month.

Assemblies Step Up . . .

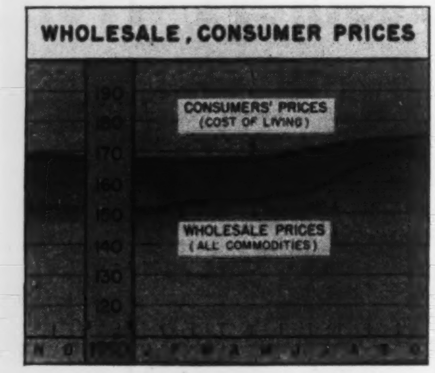
Automakers won at least a round from the battle with shortages in the week ended Dec. 2 as the industry stepped up its outturn to 127,657 cars and 23,347 trucks from 104,148 and 18,535 in the preceding week. Chevrolet and Ford assemblies made the biggest gains that week. Assemblies hover around the 7.5 million mark for U. S. plants alone, compared with 6 million at this time a year ago. Complications for automakers are multiplying and stifle possible cheers about new production records. Tighter credit, NPA orders on nonferrous metals, a tight steel supply situation and the need for boosting prices due to higher materials and wage costs are all aiding headache powder sales in the motor capital.

Credit Rise Slows . . .

Credit curbs began to take effect in October and checked the rapid rise in consumer credit outstanding, the Federal Reserve Board says. At

BAROMETERS of BUSINESS

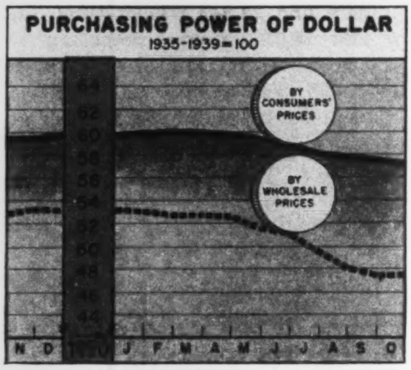
		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	81.5	102.5	98.5	89.5
	Electric Power Distributed (million kilowatt hours)	6,716	6,506	6,551	5,743
	Bituminous Coal Production (daily av.—1000 tons)	1,508	2,000	1,935	2,172
	Petroleum Production (daily av.—1000 bbl)	5,825	5,888	5,896	5,105
	Construction Volume (ENR—Unit $1,000,000)	$260.3	$235.1	$199.7	$219.6
	Automobile and Truck Output (Ward's—number units)	151,004	122,683	177,096	72,994
	*Dates on request. †1950 weekly capacity is 1,928,721 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	665†	701	862	694
	Business Failures (Dun & Bradstreet, number)	160	146	181	221
	Money in Circulation (in millions of dollars)‡	$27,543	$27,450	$27,219	$27,542
	Department Store Sales (changes from like wk. a yr. ago)‡	−3%	+8%	+5%	−5%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$13,009	$17,265	$16,292	$11,265
	Federal Gross Debt (billions)	$257.0	$257.0	$256.8	$257.0
	Bond Volume, NYSE (millions)	$21.0	$20.7	$17.6	$23.0
	Stocks Sales, NYSE (thousands of shares)	12,212	10,408	9,223	8,315
	Loans and Investments (billions)†	$69.7	$69.4	$69.2	$66.7
	United States Gov't. Obligations Held (millions)†	$33,309	$33,349	$53,729	$37,430
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	157.76	157.76	157.76	152.52
	STEEL's Nonferrous Metal Price Index‡	240.7	240.9	236.9	164.0
	All Commodities†	171.7	171.2	169.6	151.5
	Metals and Metal Products‡	180.6	180.4	179.7	167.3
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				



Price Indexes

	Wholesale		Consumers	
	1950	1949	1950	1949
Jan. ..	151.6	160.5	166.9	170.9
Feb. ..	152.7	158.1	166.5	169.0
Mar. ..	152.6	158.4	167.0	169.5
Apr. ..	152.9	156.9	167.3	169.7
May ..	155.9	155.7	168.6	169.2
June ..	157.3	154.4	170.2	169.6
July ..	162.9	153.4	172.5	168.5
Aug. ..	166.3	153.0	173.0	168.8
Sept. .	169.5	153.6	173.8	169.6
Oct. ..	169.1	152.2	174.8	168.5
Nov. .	....	151.6	....	168.6
Dec. ..	....	151.3	....	167.5
Average	....	154.9	....	169.1

Bureau of Labor Statistics

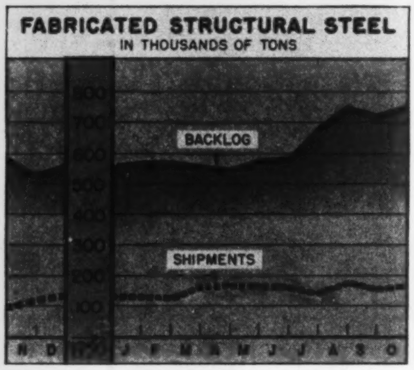


Purchasing Power of the Dollar

As Measured by:

	Wholesale Prices		Consumers' Prices	
	1950	1949	1950	1949
Jan. ...	53.1	50.1	59.9	58.5
Feb. ...	52.7	50.9	60.1	59.2
Mar. ..	52.7	50.8	59.9	59.0
Apr. ...	52.6	51.2	59.8	58.9
May ...	51.6	51.6	59.3	59.1
June ..	51.2	52.0	58.8	59.0
July ...	49.5	52.4	58.0	59.3
Aug. ...	48.3	52.6	57.8	59.2
Sept. ..	47.5	52.4	57.5	59.0
Oct. ...	47.6	52.8	57.2	59.3
Nov. ...	...	53.2	...	59.3
Dec. ...	...	53.2	...	59.7

U. S. Office of Business Economics



Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlog	
	1950	1949	1950	1949
Jan.	135.2	152.7	565	675
Feb.	129.6	145.9	565	683
Mar.	156.8	185.9	556	582
Apr.	164.4	179.2	540	628
May	168.1	171.1	578	599
June	172.1	172.3	580	583
July	141.6	148.0	684	605
Aug.	180.7	183.9	741	583
Sept.	157.0	162.1	716	562
Oct.	167.7	99.8	747	584
Nov.	....	117.2	...	527
Dec.	....	135.5	...	555
Total	....	1,853.5	...	...

American Institute of Steel Construction

Charts—Copyright, 1950, STEEL

the end of October total consumer credit outstanding was $19,366 million. This was an increase of $51 million during the month compared with jumps of over $300 million in each of the preceding five months. Each segment of consumer installment credit, including auto loans, increased slightly over the preceding month. But a $38 million drop in the size of outstanding charge account credit held the increase to $51 million. Total outstanding installment credit at the end of the month is estimated at $13,379 million, compared with $13,337 million a month earlier. Added to this is outstanding non-installment credit of $5987 million, a $9 million increase during October. Auto loans increased $18 million and accounted for almost half the rise in installment credit. All other installment credit which includes credit on radios, refrigerators, etc. increased $24 million.

More Failures . . .

Business failures tabulated by Dun & Bradstreet were more numerous in October than in September but were below the corresponding month in 1949. October's failures totaled 707 and were 9 per cent higher than September's 648. Liabilities involved in October failures totaled $16,649,000 and exceeded those in the preceding month by 9 per cent. The increase took place entirely among medium-sized firms. Manufacturing and mining failures totaled 150 in October and involved liabilities of $5,949,000. New business charters increased to 6782 in October from 6277 a month earlier. They were again below the year ago level.

Construction Trend Down

But expansion in nonresidential building holds total at peak for this time of year

EXPANDED nonresidential building in November partially offset a decline in homebuilding to hold construction activity at a record level for this season of the year. Commerce and Labor Departments report total value of all types of new construction put in place during the month amounted to $2506 million, off 8 per cent from October but 23 per cent above November, 1949.

A further tapering-off in the housing boom is indicated by a larger than seasonal drop of 10 per cent in the value of work done on new private residential buildings. At $1020 million this total is still 36 per cent above a year ago and the highest November total on record.

Plant Expansion — Contra-seasonal gains of 5 to 10 per cent in commercial and industrial building and smaller increases in construction of religious, private educational and hospital buildings accounted for the small rise in non-residential construction.

Effects of the NPA order limiting construction for social and recreational purposes began to show up with a small decrease in construction activity on these projects.

Despite November's decline, private homebuilding continues to be the largest single factor in establishing 1950 as the record year for new construction expenditures. Private residential building accounted for 44 per cent of the total value of all types of new construction in November and 45 per cent of total new construction in the first 11 months. Private new construction other than residential building makes up only 29 per cent of the total for the first 11 month of this year and public construction accounts for the remaining 26 per cent.

Less Government Work—All types of public work declined from October to November. School and hospital building were down only slightly and highway construction dipped less than is usual at this season. Military and naval construction expenditures amounted to $17 million in November and were $3 million higher than in the like month a year ago.

Total construction outlays this year reached $25,392 million by the end of November, exceeding the corresponding year ago total by 22 per cent. Private expenditures at $18,935 million are 28 per cent higher and public outlays at $6457 million are up 9 per cent.

Efficiency Boosts Earnings

Production economies resulting from continued standardization of locomotive design and selective purchasing resulting in more economical sources of supply have paid off for American Locomotive Co., Schenectady, N. Y. The company credits these factors as being responsible for a slight improvement in earnings for the first three quarters this year over the like 1949 period despite a $17 million drop in sales. Earnings figured at the new tax rate are down slightly for the period and will be subject to the retroactive features of an excess profits tax.

Alco's business to date reflects only a modest increase from the expanded arms program but the company expects its participation in defense activity to increase in the near future. Locomotive orders are expected to continue at a high rate because of a better earnings picture for the railroads and also due to the fact that economies resulting from dieselization make buying the equipment feasible even in a period of declining earnings. Company's backlog on Oct. 1 amounted to $72 million, compared with $52 million on the same date last year.

Controllers Move at Good Rate

Incoming orders are coming in at a good rate reports Robert H. Hoge, president, Clark Controller Co., Cleveland. October orders capped a steady rise throughout this year by reaching $1.8 million and November orders were between $1.3 and $1.4 million. The monthly average for the last six months has been in the $1.2 to $1.3 million range, about double the $620,000 monthly average for 1949.

Backlog rose to $4.2 million at the end of October, Mr. Hoge says, from $1.5 million at the start of this year. He estimates earnings this year will run in excess of $4 per share compared with $3.04 a share in 1949.

Railroads Will Keep Busy

Outlook is for high level of railroad traffic for the next several years but profitability of operations for the roads depends on how pending wage demands are settled and whether increased costs are offset through further increases in efficiency. That's the opinion of the Railroad Securities Committee of the Investment Bankers Association.

Railroads net income may reach a new peacetime high of $725 million compared with $698 million in 1948. The estimate for this year includes $150 million in retroactive mail pay.

The committee says that railroad financing in 1950 will include $275 million in new money raised through equipment trust certificates and sale of other debt issues totaling nearly $274 million. Next year equipment trust financing could possibly exceed the $445 million done in 1949 due to stepped up demand for rolling stock.

Boeing Wants More Engineers

Boeing Airplane Co. wants 300 more engineers by the first of next year. They're needed to help the company keep pace with the current speedup in military demands and increased work in design and research projects. More men are needed despite the record overall Engineering Division payroll of 3200 at Seattle and Wichita, Kans., and hiring that has averaged more than 50 more engineers per month.

Don't Forget South America

After conferring with business and government officials in South America, Otto F. Sieder, executive vice president of H. K. Ferguson Co., industrial engineering and building firm, says great care should be taken by our government and business leaders not to lose South American business. "Although competition from European countries is becoming increasingly keener, South American industrialists still favor the United States as their prime source of technical know-how and equipment. That is true despite the many instances in which European engineers and manufacturers have attempted to regain the market by underselling American producers."

Trailer Firm May Spread Out

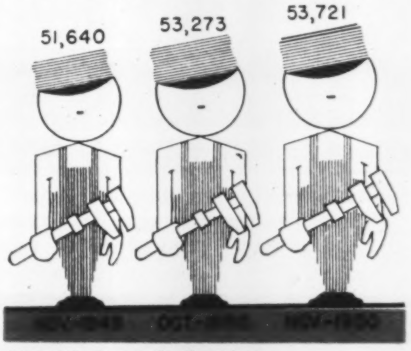
Because the present cost of delivering house trailers is 20 to 22 cents a mile — and therefore prohibitive — Lighthouse Trailer Co., Chicago, is planning a country-wide expansion and decentralization program. Lighthouse sold its Niles, Ill., plant to Teletype Corp. and will build a smaller factory in that town. Next year the company will erect other plants in Los Angeles, Dallas and Baltimore.

The new Niles plant will have 55,000 square feet of floor space and will cost about $350,000.

Employment Drops but Not in Industry

NONAGRICULTURAL employment including manufacturing rose 448,000 in November and reached the highest total ever attained in that month. As shown in the accompanying chart, Commerce Department totals for nonagricultural employment are 53,721,000 in November, 53,273,000 in October and 51,640,000 in November last year.

Total employment dropped to 61,271,000 in November from 61,771,000 in October due to a seasonal decline in agricultural employment. Unemployment rose to 2,240,000 from 1,940,000 in the same period but this doesn't mean worker shortages in plants will be alleviated materially. Many of the agricultural workers separated from their jobs are unavailable for defense plants because of their geographical location and others lack training for jobs that are specially tight.



Workforce Gets Bigger

. . . at peak for any November

Figures in thousands of workers.

By Definition—Commerce's Census Bureau says the reason the gain in unemployment doesn't match the drop in employment is that many of those who left work were farm harvesters and aren't in the market for another job. Census' definition of an unemployed person is one who is idle and looking for work.

Commerce Secretary Sawyer says the October to November job developments "follow the normal course for this time of the year."

Dislocations Possible — But Mr. Sawyer admits some of the idleness may have been caused by plant shutdowns traceable to the mobilization program. Producers of nonessential items have been forced to lay off workers in recent months because of a scarcity of raw materials. Another cause for higher unemployment, Commerce says, is the likelihood that job hunters appeared in the labor market in increasing numbers because of the usual holiday job pickup.

Men of Industry

William A. Callison, vice president of **American Locomotive Co.,** New York, in charge of western regional sales, was assigned charge of eastern regional sales. **William F. Lewis,** district sales manager at St. Louis, was appointed a vice president of the company, and assigned charge of western regional sales. **Stephen G. Harwood,** formerly district sales manager in New York, was appointed sales manager of Montreal Locomotive Work Ltd., Alco's Canadian affiliate. Mr. Callison will have headquarters in New York, and Mr. Lewis transfers to Chicago.

E. W. Bliss Co. appointed **Roy J. Dusseau** as district manager in charge of its Dayton, O., office. He formerly was with Meisel Machine & Tool Co., Toledo, O., as general manager. Prior to that he was president and owner of Dusseau Die Service Co.

Carl L. Hecker, vice president in charge of manufacturing, **Oliver Corp.,** Chicago, was elected to the board of directors of that company.

Whiting Corp., Harvey, Ill., announces opening of a sub-sales office in Cleveland, 637 Penton building, and **A. C. Kukral** will be resident sales engineer. The company also opened a district sales office in Seattle, 350 Skinner building, with **R. E. Florine** as district manager.

Bruce H. Atwater, vice president, eastern division, **Pacific Airmotive Corp.,** Linden, N. J., announced appointment of **William J. Power** as manager of material control and purchasing. **Michael J. Martin** will assist Mr. Power. **Maurice A. Barbettini** was appointed service sales manager and **Robert W. Hughes** becomes merchandise sales manager of the Linden division. **Elmer M. Hanson,** former sales manager, eastern division, was transferred to the sales department at Burbank, Calif.

Mid-West Abrasive Co., Owosso, Mich., appointed **Henry L. LeMay** Chicago district manager.

Robert T. Daily was promoted to field engineer in charge of the Chicago office of **Lord Mfg. Co.,** Erie, Pa. He will report to **Charles L. Freel,** manager of the field engineering department at the home office.

FRED FRAME
. . . joins Kidd Drawn Steel as V. P.

Fred Frame was elected vice president, **Kidd Drawn Steel Co.,** Aliquippa, Pa. Connected with U. S. Steel Corp. and subsidiaries for many years, he started his association in 1936 as industrial engineer, American Sheet & Tin Plate Co. He transferred to Carnegie-Illinois Steel Corp.'s Irvin Works in 1938 where he served as superintendent of industrial relations, and superintendent of cost planning. In 1944 he was transferred to that company's sales department. Since 1945 Mr. Frame had been with U. S. Steel Corp. of Delaware, his recent position being senior staff assistant to the vice president-sales.

Adamson-United Co., Akron, manufacturer of production equipment for rubber, plastics and plywood industries, appointed **Norman J. Elder** as manager of its calender division, **Harold P. Lamb** as manager of project engineering, **R. C. Seanor** as chief engineer, and **G. S. Andrus** as senior engineer.

Warren Frebel was appointed purchasing director, **Majestic Radio & Television Division,** Wilcox-Gay Corp., Brooklyn, N. Y. **W. R. Bobisink** and **Morris Siegel** were appointed assistant purchasing directors. **James E. Mahoney Jr.** and **Paul Friedman** have joined the purchasing staff as buyers.

Charles Agnew was appointed superintendent of the Chester, Pa., blast furnace, **Central Iron & Steel Co.,** Harrisburg, Pa., subsidiary, Barium Steel Corp. He was at one time superintendent of blast furnaces, Alan Wood Steel Co., Conshohocken, Pa.

ROBERT A. MILLER
. . . sales mgr., Sier-Bath gear coupling div.

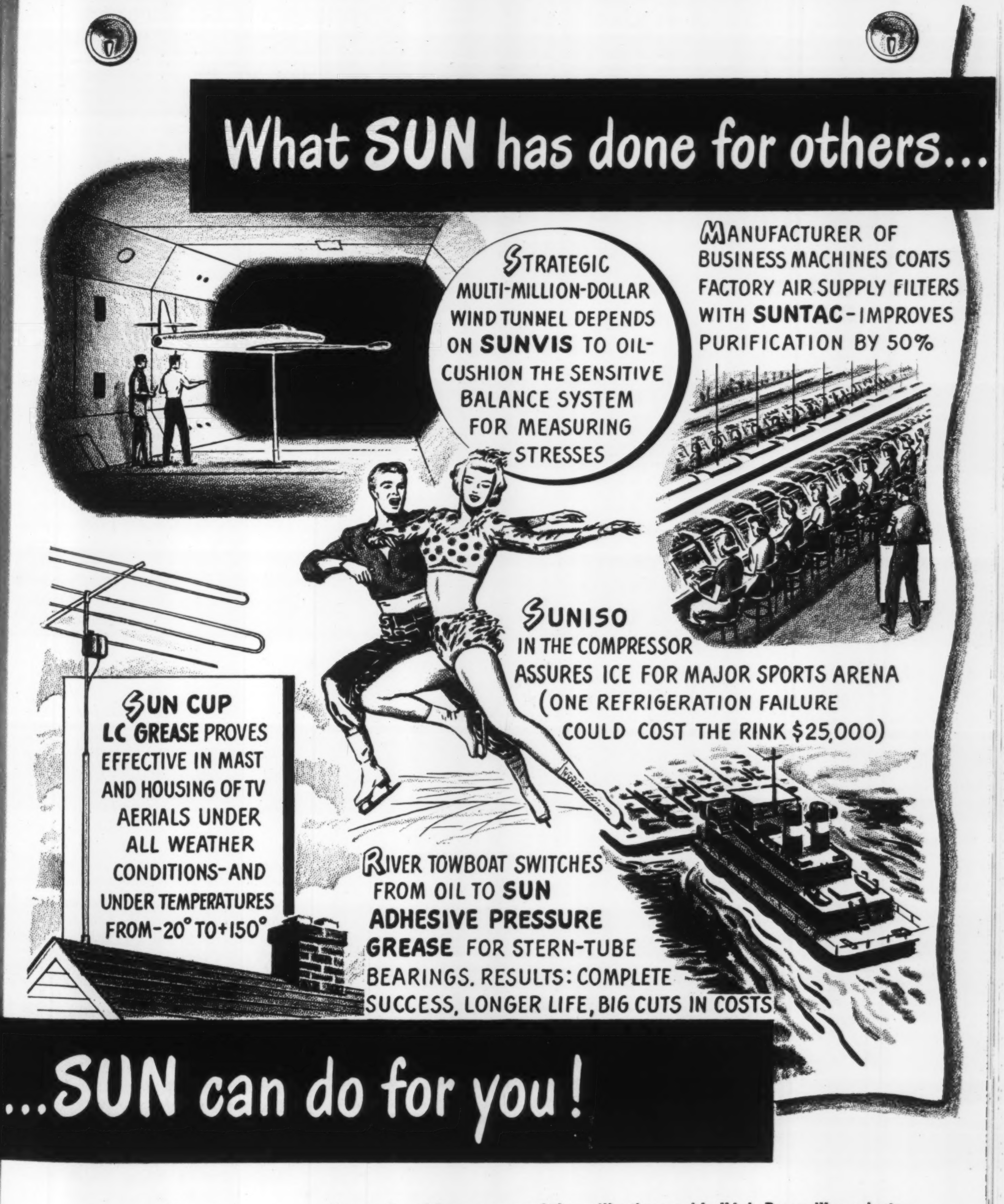
Robert A. Miller was appointed sales manager, gear coupling division, **Sier-Bath Gear & Pump Co. Inc.,** North Bergen, N. J. Previously advertising manager for the company and assistant sales manager of the coupling division, Mr. Miller is now in charge of appointing representatives for the company's new line of flexible gear couplings.

McCulloch Motors Corp., Los Angeles, appointed **Walter K. Deacon** production engineer for the company's line of lightweight engine-driven equipment and target aircraft engines. He formerly was assistant to the manager of engineering and manufacturing, Marquardt Aircraft Co., Los Angeles.

Walter H. Wheeler Jr., president, Pitney-Bowes Inc., Stamford, Conn., was elected president of the New **England Council** at the 25th Anniversary Conference of the council held in Boston Nov. 23-24. He succeeds **J. C. Richdale** who becomes chairman of the Senior Council. Other officers elected included **Robert P. Tibolt,** Massachusetts, as treasurer; **H. Ladd Smith,** Vermont, as secretary; and **Dudley Harmon,** Boston, as executive vice president.

William F. Hagen was appointed by **SKF Industries Inc.** as assistant district manager of its New York office. He joined the ball and roller bearing firm in 1930 and has been a field engineer since 1943.

Soss Mfg. Co., Detroit, added two additional members to the company's board of directors, increasing the size of the board from three to five. The


What SUN has done for others...
STRATEGIC MULTI-MILLION-DOLLAR WIND TUNNEL DEPENDS ON SUNVIS TO OIL-CUSHION THE SENSITIVE BALANCE SYSTEM FOR MEASURING STRESSES
MANUFACTURER OF BUSINESS MACHINES COATS FACTORY AIR SUPPLY FILTERS WITH SUNTAC-IMPROVES PURIFICATION BY 50%
SUNISO IN THE COMPRESSOR ASSURES ICE FOR MAJOR SPORTS ARENA (ONE REFRIGERATION FAILURE COULD COST THE RINK $25,000)
SUN CUP LC GREASE PROVES EFFECTIVE IN MAST AND HOUSING OF TV AERIALS UNDER ALL WEATHER CONDITIONS-AND UNDER TEMPERATURES FROM-20° TO+150°
RIVER TOWBOAT SWITCHES FROM OIL TO SUN ADHESIVE PRESSURE GREASE FOR STERN-TUBE BEARINGS. RESULTS: COMPLETE SUCCESS, LONGER LIFE, BIG CUTS IN COSTS
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Unusual problems or run-of-the-mill—thoroughly "Job Proved" products are only half the story of their solution. *The other half is correct application.* That's why it will pay you to call in a Sun industrial representative. His broad experience can mean substantial savings in your operations. Just get in touch with the nearest Sun Office.

SUN OIL COMPANY · *Philadelphia 3, Pa.*

In Canada: Sun Oil Company, Ltd., Toronto and Montreal new directors are **Scott Carpenter** and **Frank W. Donovan.**

Frederick N. Taff was appointed plant engineer for the Naugatuck, Conn., chemical plant of **United States Rubber Co. Dr. Harry Wintsch** was appointed assistant to the production manager of the Naugatuck chemical division.

Raymond M. Lyons was appointed industrial relations manager, Lincoln plant, **Lincoln-Mercury Division,** Ford Motor Co., Detroit.

Walter A. McLean was appointed manager of erection, **Brownhoist Corp.,** Bay City, Mich. He has been serving in a sales and service capacity with the Philadelphia office, and replaces the late **John J. Schreck.**

Dr. George W. Vinal, authority on storage batteries and electrical standards, was named engineering consultant and adviser to **Electric Storage Battery Co.,** Philadelphia.

Joseph F. Eckel, manager, Lynn, Mass., River Works, **General Electric Co.,** was appointed manager of the company's large motor and generator divisions, Schenectady, N. Y. He succeeds **J. M. Crawford,** transferred to Pittsfield, Mass., as manager, transformer and allied product divisions. **Herbert L. Ross,** manager of manufacturing, GE meter and instrument divisions, was named to succeed Mr. Eckel at River Works.

M. Stewart Ireys, for the last seven years director of merchandising, Carborundum Co., Niagara Falls, N. Y., has joined the staff of **Ketchum, MacLeod & Grove Inc.,** Pittsburgh advertising agency, as an account executive.

Appointments of branch house managers in the New York district, **Graybar Electric Co.,** New York, include: **John T. Porter,** former manager of the Albany, N. Y., house, transferred to Rochester, N. Y., in the same capacity; and **Frank C. Sweeney** was appointed manager at Albany succeeding Mr. Porter.

C. E. Lesher, for the last 27 years associated with **Pittsburgh Consolidation Coal Co.,** Pittsburgh, and its predecessor, Pittsburgh Coal Co., retired Dec. 1. Since 1939, as president of Pittsburgh Coal Carbonization Co., now the Disco Co., he developed the Disco continuous process of low temperature carbonization of coal. Mr. Lesher plans to engage in consulting practice as a specialist in coal processing and the economics of production and utilization of coal and its products.

Clarance Stanley, retired as a partner in the investment banking firm of Morgan Stanley & Co., was appointed a member of the financial staff of **General Motors Corp.,** in the executive offices in New York. Mr. Stanley will act as co-ordinator for General Motors in its investment relations with banking institutions which were selected by GM to serve as trustees under its newly established non-contributory hourly-rate employee and salaried employee pensions.

Walter S. Sheldon was appointed advertising manager, **Cory Corp.,** Chicago. He succeeds **R. Nicholas Hoye.** Immediately prior to association with Cory, Mr. Sheldon was a member of the merchandising staff of Hotpoint Inc., and previously was advertising manager for Otarion Inc., Chicago, manufacturer of hearing aids and audiological instruments.

WALTER S. SHELDON
. . . advertising manager of Cory

T. F. Riddle, recently factory manager for Huey & Philp Co., Dallas, has joined **Luscombe Airplane Corp.,** Dallas, in a similar capacity. Prior to joining Huey & Philp in 1949, Mr. Riddle was shop superintendent at Texas Engineering & Mfg. Co. Inc., and was one of the original group which started Temco in 1945.

Charles B. McCoy, director of sales, explosives department, **E. I. du Pont de Nemours & Co. Inc.,** Wilmington, Del., was appointed assistant general manager of the company's electrochemicals department. He succeeds **Donald O. Notman** who became general manager of the electrochemicals department.

Chet Borlet has joined the sales and service staff of **United Chromium Inc.,** New York. After orientation courses at United Chromium's organic coatings laboratories and plating laboratories at Carteret and Detroit, Mr. Borlet will report to the Los Angeles regional office.

Bettinger Enamel Corp., Waltham, Mass., elected as directors: **Myles L. Mace,** chairman of the United States Department of Commerce, Small Business Advisory Committee, and **George M. Hansen,** president, National Federation of Financial Analysts.

Frank Barilla was assigned to **Allis-Chalmers Mfg. Co.'s** Cleveland district office as a water conditioning sales representative. **James H. Jones** was appointed as a sales representative to Allis-Chalmers' San Antonio, Tex., district office.

Edward Valves Inc., East Chicago, Ind., has added **Samuel E. Bowler** to its executive sales and engineering staff. Mr. Bowler, who has many years of experience in power generation, will offer consulting information applying to valve installations to utilities and allied interests.

Signode Steel Strapping Co., Chicago, appointed **Merritt W. Jones** to the newly created Baltimore sales district as manager. This district comprises Virginia, and portions of Maryland, West Virginia and North Carolina.

Inland Steel Co., Chicago, announces changes at its Indiana Harbor Works. Appointments include: **Edward J. Gardner,** formerly superintendent of blast furnaces and coke ovens, made assistant to **Hjalmar W. Johnson,** vice president. He moves to Chicago headquarters. Operating departments of the plant are divided into two groups. The primary operations and mills will be in charge of **Lee B. Luellen** as assistant general superintendent. The flat rolled departments are under **J. Foster Mayberry** as assistant general superintendent. Replacing Mr. Luellen as assistant general superintendent in charge of industrial relations is **Theodore F. Plimpton,** and **M. M. McClure** is administrative assistant to Mr. Plimpton. **W. A. Blake** is now director, community relations, and is succeeded by **R. E. Hoover** as superintendent of labor relations. **J. F. Peters** was made superintendent of blast furnaces to replace Mr. Plimpton. **W. C. Kostbade** was made superintendent of hot strip mills.

Bay State Smelting Co. Inc. and **Brass**

Mill Materials Corp., Sommerville, Mass., appointed **Fred Dittman** as general manager of their New York office. The home office continues to be in Massachusetts, but the New York office will handle sales of all white metals as well as the purchase of scrap and other nonferrous metals.

Frank P. Downey was named director of sales of both the Pinspotters Division and the bowling products subsidiary of **American Machine & Foundry Co.**, New York.

Pittsburgh Chapter, **Institute of Scrap Iron & Steel Inc.**, elected as president, **Samuel M. Goldberg** of Pennsylvania Iron & Steel Co. He succeeds **Herman Caplan**, M. W. Singer Co. Other officers elected are: **R. M. Jacobson**, vice president, Luria Bros. & Co. Inc.; **Leon Coslov**, treasurer, Tube City Iron & Steel Co.; and **Lou Greenberg**, secretary, **J. Fingeret & Son.**

Thomas C. Gray was appointed director of engineering for **Pullman-Standard Car Mfg. Co.**, Chicago. He joined the company in 1949 as manager of engineering production.

American Society of Tool Engineers was notified of the appointment of **Herbert L. Tigges**, president of ASTE, as adviser and consultant on machine tools to **National Production Authority**, Washington.

Harbison-Walker Refractories Co., Pittsburgh, appointed **Walter H. Sarraf** to its Pittsburgh district sales office. Mr. Sarraf has been associated with the company's sales department since 1930, having served as sales statistician and correspondent.

EUGENE MOWLDS JR.
. . . American Bridge asst. gen. contracting mgr.

Eugene Mowlds Jr. was appointed assistant general contracting manager, and **James C. Hamilton** as assistant to the vice president-contracting, **American Bridge Co.**, Pittsburgh, subsidiary, U. S. Steel Corp. Mr. Mowlds succeeds **Harold A. Brainerd**, retiring after 49 years with the company.

William P. White Jr. was elected vice president in charge of manufacturing of **White Cap Co.**, Chicago, manufacturer of metal caps for glass containers. He has been assistant general manager. **Robert P. White**, sales manager in charge of the midwest territory, was elected a director.

Charles E. Carll and **William H. McGaughey** were elected directors of **Public Relations Society of America**, New York.

Ray A. Bland has joined the sales engineering department, **Sutton Engineering Co.**, Bellefonte, Pa. He formerly was employed in the sales department of United Engineering & Foundry Co., Pittsburgh.

JAMES C. HAMILTON
. . . American Bridge asst. to V. P.-contracting

Earl C. Blaine was appointed plant manager and **Robert J. Kalbfleisch** as assistant works manager at the Budd Co.'s Hunting Park plant, Philadelphia.

A. J. D'Vileskis was appointed to the newly created office of assistant to the president of **Columbia Metal Stamping Co.**, Cleveland. For the last 14 years he has been general superintendent of Eaton Mfg. Co.'s stamping division.

Ralph B. Witherspoon was appointed assistant treasurer, Pittsburgh, for **Universal Atlas Cement Co.**, subsidiary, U. S. Steel Corp. He succeeds **Daniel V. Johnson**, retired after more than 36 years with U. S. Steel and subsidiary companies.

OBITUARIES...

Walter Beech, 59, founder and president, **Beech Aircraft Corp.**, Wichita, Kans., died Nov. 30 after a heart attack.

William E. Kugeman, 81, retired vice president, **American Radiator & Standard Sanitary Corp.**, New York, died Nov. 28 in Brattleboro, Vt. He supervised the company's European interests prior to World War II, and had been a vice president since 1920. He retired ten years ago.

Paul F. Pie, 68, retired project engineer, **Atlas Powder Co.**, Wilmington, Del., died Nov. 28.

Frank W. Manegold, 67, a former treasurer, **Briggs & Stratton Corp.**, Milwaukee, died Nov. 28 at Greenville, Del. He also was a former president of Soreng-Manegold Co., manufacturer of automobile parts.

Joseph Fischler, 64, sales organization counsel for **United States Steel Corp.** of Delaware, died of a heart ailment Nov. 30 in Pittsburgh. A specialist in corporation organizational problems, he had been with U. S. Steel since 1941 and had previously been with General Motors Corp.

Charles Engelhard, 83, president of **Baker & Co. Inc.**, Newark, N. J., metal dealer and refiner, died Dec. 1. Well known in the precious metals industry throughout the world, Mr. Engelhard gave support to engineering, chemical and metallurgical research in this field.

Campbell E. Locke, 76, retired lawyer, and a former director of **Cerro de Pasco Copper Corp.**, New York, and secretary-treasurer of the company from 1933 to 1942, died Nov. 30 at his home in Cedarhurst, L. I.

Alfred Warner Jr., 72, vice president and treasurer, **Warner Co.**, Philadelphia, died Nov. 25.

John W. Schultz, 43, purchasing agent for **Superior Steel Corp.** at Carnegie, Pa., died Nov. 25.

Frank J. Itts, 54, assistant supervisor of employment, Youngstown district, **Youngstown Sheet & Tube Co.**, died Dec. 3 following a heart attack.

W. Bradford Hill, 64, manager of manufacturing, refrigerator division, **General Electric Co.**, Erie, Pa., died Nov. 22 after a long illness.

HALF

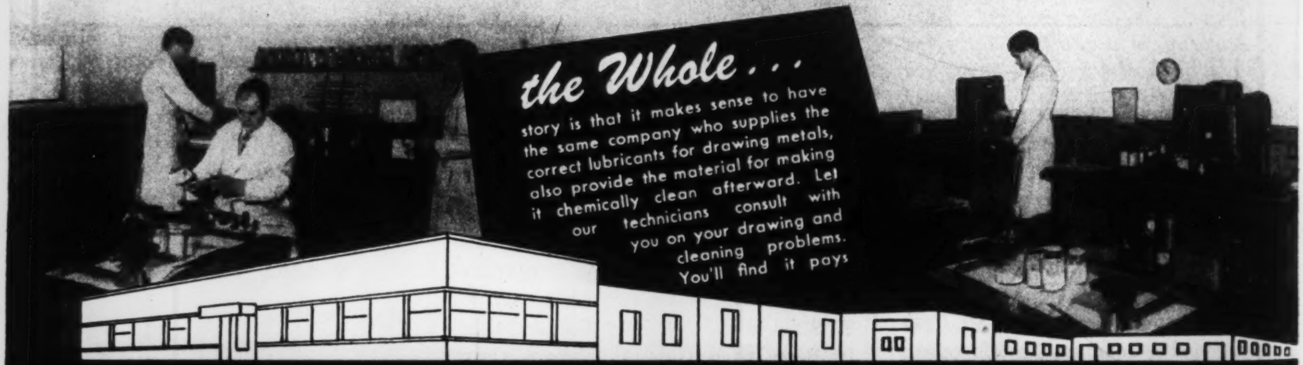
Fluid-Film

Half of this message has to do with the drawing of steel, stainless steel, aluminum, brass with FLUID-FILM U-19 . . . it is non-corrosive to dies and metals . . . applied with brush, roll, dip, spray,—weld through it. FLUID-FILM, a non-pigmented, semi-emulsion compound performs the toughest job economically—a little of it goes a long way . . .

the other HALF

metal cleaner SC-9

is concerned with the cleaning of stampings drawn with FLUID-FILM in pressure washing equipment with Northwest Metal Cleaner SC-9. It has been on the market for years and is thoroughly plant proven for all washing machine use regardless of application. SC-9 is still one of the lowest priced cleaners in spite of the alkali price increase . . .



the Whole . . .

story is that it makes sense to have the same company who supplies the correct lubricants for drawing metals, also provide the material for making it chemically clean afterward. Let our technicians consult with you on your drawing and cleaning problems. You'll find it pays

NORTHWEST CHEMICAL CO.
9310 ROSELAWN DETROIT 4, MICH.

. . . serving you since '32

Production AND Engineering
NEWS AT A GLANCE

FASTER POLISHING BY BELT— Rough and finish polishing of metal parts by means of high-speed coated abrasive belts mounted on lathes and backstands is coming into more widespread use and is showing interesting economies (p. 88) in certain cases over wheel polishing. For one thing, because of the greater area of contact abrasive, belts are less inclined to heat up. Thus, the danger of burning and warping parts by frictional heat is reduced. Beyond that, operators of only average skill can quickly learn the technique of belt-backstand polishing.

NEW HEAT TREATING WRINKLE— Lead or lead alloy compositions are playing a new role in heat treating. A. F. Holden Co., New Haven, Conn., reports the use of molten lead as an electrode in its electric salt furnaces. The principle is simple and, in practice, demonstrated several advantages. Here is how it works: A pool of molten lead alloy lying in the bottom of the furnace chamber contacts a source of electrical power on one end and a molten salt bath on the other. Flow of current between two such electrodes in the same bath creates the heat necessary to keep both the salt and lead alloy molten. Varying power input varies the bath temperature. This means less power consumption because the usable heat treating area of the furnace is the only area heated. Also sludge is easy to remove.

ROBOT SIZES AND SORTS—Automatic gaging and sorting of small compressor pistons and wristpins is being done electronically at an eastern plant (p. 91), with pistons being classified into 18 groups of sizes in gradins of 0.0001-inch, and wristpins into ten sizes, plus over and under sizes. Gaging is done "on the fly" and the gage transmits its reading electrically to the classifier where a chute to the proper size group is opened. Human fallibility and slowness in gaging and sorting are things of the past.

TIP ON TOOL CHANGING—Changing tools in a machine is a problem that becomes more important as number of tools as well as demand for higher production increases. To keep production high, tools should be changed before they become dull. But why change just the tool —why not both tool and tool holder as a unit. Ex-Cell-O Corp., Detroit, says replacing the dull tool and its holder with a sharp tool already adjusted in its holder is an effective means of reducing tool changing time. For example, if a dull drill is to be replaced, the drill and adjustable length sleeve are removed from the spindle as a unit and replaced by a drill and sleeve already adjusted to required projection. Without further adjustment the machine is again ready to produce good parts. Projection of each tool remains constant regardless of changing tool length. Once a machine is set up there is no reason for inserting a tool, then running several trial parts.

CONDUIT BY THE MILE— It's only a matter of minutes between coils of cold-rolled strip and finished bundles of 10-foot conduit at a new Ohio mill producing this material in large volume. Careful integration of slitting, forming, welding, sizing, shearing, straightening, galvanizing and painting operations does the trick, with virtually no manual attention required and at speeds running up to 200 feet per minute. Size range from ½ to 2-inch OD. Details accompanied by nine striking illustrations, start on p. 94.

SANDBLASTING SPECS TOO LOOSE— Sandblasting specifications need an overhauling—they are too loose tending to create confusion, according to A. J. Liebman, chairman of the Surface Preparation Committee of the National Association of Corrosion Engineers. He says a closer definition of blast finish classifications is needed to replace the all too common prescription of "blast the surface and prepare for paint application". For example, he points out, a product that must perform a lifetime of service without subjecting it to impact or high vibration stresses, will hold a coating as effectively on a surface prepared with the brush-off methods, than the one that received a white steel preparation. But if impact and other surface forces produce undue stresses between metal and coating, nothing less than a commercial surface preparation should be selected.

$3 BILLION IN REJECTS— That is the annual bill rendered U. S. industry for off-standard manufactured products. Progress is being made in whittling down this staggering amount, frequently by the application (p. 106) of modern quality control systems. Use of effective standards also helps and in addition may contribute to the elimination of problems arising in operating routine.

THINNER THAN THIN— Sounds incredible but the research department of Armco Steel Corp. has succeeded in reducing steel strip to such a thinness that it takes ten layers to equal the thickness of a human hair. Need for a superthin alloy arose with development of high-frequency electronic equipment. Manufacturers in the field and the Navy turned the problem over to Armco. Result is a mill that produces strip 0.00025-inch thick with work rolls that are only 5/16-inch in diameter.

Fast Abrasive Belt Finishing Lo

This relatively new method is an important addition to production line mechanical finishing techniques. Cooler, faster cutting is one of its greatest advantages

PART I

COATED abrasive belts, used to great advantage in polishing and finishing, are finding wide application on many types of metal products. Cutting rates are faster, operating temperatures cooler and abrasive area greater, making possible sizable savings in time, labor and material on certain applications.

Maximum benefits from abrasive belt polishing techniques are possible only if a user is careful in selecting and operating his equipment.

For roughing out polishing operations, a coarse grit is used, running the belts dry so a rapid cutting action is produced. For finishing, fine grit sizes are employed and in some cases a low melting point grease stick is applied to the belt to prevent loading or glazing and overheating of the work. The addition of such a lubricant generally produces a smoother, brighter surface.

Belt Backstand Method—Belt backstand equipment consists of a contact wheel mounted on a polishing lathe in the place of a setup wheel. The coated abrasive belt is tracked over the contact wheel by the backstand idler that is mounted behind the machine.

Work is done on the belt supported and driven by the contact wheel in the same position as with setup wheels. Also, there is a small area or line contact such as is present with grinding wheels or setup wheels. The contact wheel design affects both the cutting action and life of the belt.

The backstand idler provides a means of putting more abrasive area to work largely with existing equipment. For example, data were presented by Carborundum Co. to show that a standard length (14 foot by 4-inch) backstand belt has four times the abrasive area of the usual setup wheel. The belt-backstand method is used for grinding, rough polishing, fine polishing, and "oiling out" in preparation for buffing and plating.

Faster Cuts in Less Time—The fast rate of cut is due primarily to the inherently sharper coating of the coated abrasive belt as compared to either grinding wheels or setup wheels. Fast cutting rate results in less time per piece to be polished; thus, less labor cost per piece per operation and higher production per day per man.

A second advantage is that it is frequently possible to reduce the number of operations necessary to produce a certain finish. That's done by skipping one or more grit sizes and by taking larger steps between operations.

Four Belts—1400 Pieces—Discussing abrasive belt polishing prior to plating before the 1950 annual convention of the American Electroplaters' Society, E. E. Oathout, Behr-Manning Corp., cited a number of cases to illustrate the advantages. For example, ventilator window reveals made of steel are being satisfactorily polished in one operation, on a 180-grit aluminum oxide belt, 2 inches wide and 132 inches long.

The belt operates over an 8-inch diameter rubber contact wheel at a surface speed of approximately 6000 fpm. On a recent production run, four belts produced 1400 pieces. The same operation required eight hard density and eight soft density setup wheels, or two operations to complete the job.

Production Up, Handling Down—In another plant example, where plumbing fixtures were being finished, the operator handled the part nine times using setup wheels because of heat generated in roughening and finishing. Three operations were required with setup wheels. Most fixtures were roughed with a grit 50 or 60 grain, polished with a No. 150 and fined with a No. 240 prior to buffing and plating.

Coated abrasive belts outproduced these setup wheels, using only two operations, the roughing operation with No. 180 and a finishing operation with a No. 240. The greater cutting area of the coated abrasive belt generated less heat and the operators only handled the part five times, as compared to nine times when using wheels. Equipment is available for automatic application of lubricants to abrasive belts in polishing operations.

In plants doing diecast polishing, coated abrasive belts show production advantages. According to Mr. Oathout, in many cases better finishes are obtained with a coated abrasive belt and fewer rejects encountered.

In one plant cast iron furnace grilles are ground down with a No. 60 medium density wheel. The second operation required a hard density No. 40 setup wheel to grind down the center section of the grille. These two operations were followed by a finish grind along both outside edges and center with a No. 120 medium density setup wheel. On the same job, it was found that a new grit No. 40 aluminum oxide 4 x 148-inch belt would reduce the outside edges satisfactorily. After being dulled from grinding outside edges the belt was again used to reduce the grille centers.

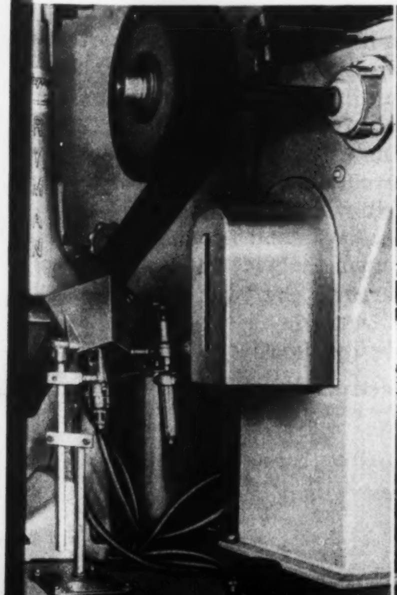
Both operations were done over hard density, segmented canvas contact wheels, 12 inches in diameter and 4 inches in face width. Grilles were completed with a lightly greased No. 100 aluminum oxide belt, operating over a soft density contact wheel. In this case production was increased 26 per cent, abrasive

g Lops Off Costs

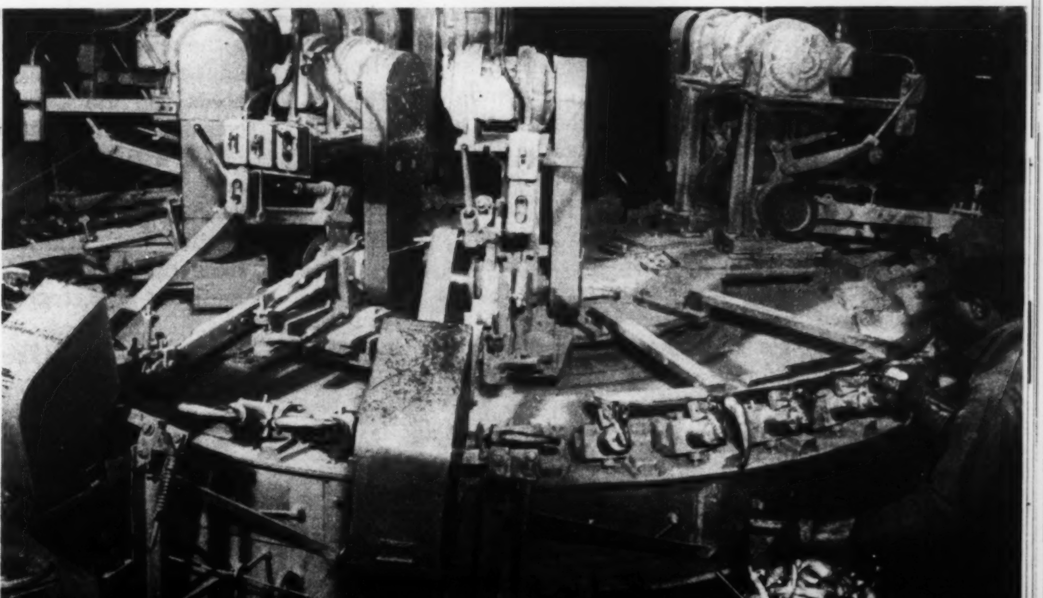
License plate frame is one of many types of parts that may be polished prior to plating by an operation using a greased cloth abrasive belt. Courtesy Behr-Manning Corp.

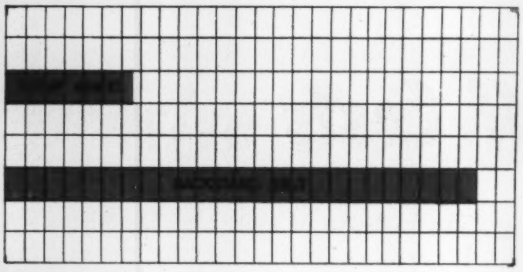
Abrasive belt backstand method applied to weld removal on steel bicycle parts. One operation replaced the former three-step method. Courtesy Minnesota Mining & Mfg. Co.

Automatic equipment for applying a formulated belt dressing in abrasive polishing operations. Time consumed by manual grease stick application is eliminated. Courtesy Wagner Bros. Inc.

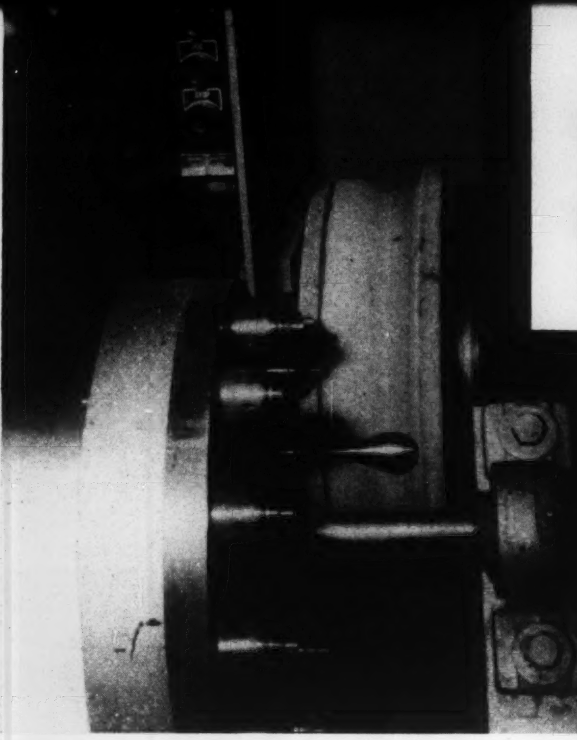


Zinc die cast door handles being polished on a rotary type automatic belt polishing machine at Ternstedt Division, General Motors Corp. Courtesy General Motors





Above—Chart showing why a coated abrasive belt cuts cooler. It compares the interval between work contacts for given points on a setup wheel and an abrasive belt. A given point on a standard size backstand belt travels about four times as far as does a given point on a setup wheel before coming in contact with the work again. Chart prepared by Coated Abrasive Div., Armour & Co.



Left—Squirrel-cage grill utilizing abrasive belts polishes steel crank handles automatically. Production was stepped up from an original rate of 50 per hour to a high of 960 per hour. Courtesy Minnesota Mining & Mfg. Co.

costs were reduced 65.4 per cent, and subsequent plating failures reduced.

Plating Finish via Greased Belt—Nonferrous metals may frequently go directly to the finishing operation after deburring. An example given by the Carborundum Co. is a manufacturer of silver-plated gravy bowls. These are deep-drawn from nickel-silver and were formerly polished with a 180-grit setup wheel, followed by a 220 greased setup wheel. By changing to the belt-backstand method they were able to eliminate the 180-grit operation and produce the plating finish with a 220-grit greased belt.

Steel nearly always must be rough polished. That is especially true of forgings received in the polishing room as trimmed rough forgings with most of the flash trimmed off.

Why Cooler Cutting?—Why does an abrasive belt cut cooler? A chart prepared by the Coated Abrasives Div., Armour & Co. gives the answer. It compares the interval between work contacts for given points on a setup wheel and an abrasive belt. On a setup wheel having a 12-inch diameter, a given point travels only 3.14 feet before contacting the work once more. But a given point on a standard size backstand belt travels 12.3 feet or about four times as far as the setup wheel before coming in contact with the work again. Thus, the length of the abrasive belt which makes possible the greater interval between work contacts makes the belt a cooler polishing medium. The cooler belt grinding method greatly reduces the danger of burning or warping caused by frictional heat.

How to Pick 'Em—Two principal factors are to be considered in selecting backstand idlers: Amount of space available and length of abrasive belt required to secure adequate cooling of the abrasive material. As in the case of polishing lathes, a wide variety of idlers is available to suit every type of plant layout and every kind of grinding and polishing operation. With the majority of these idlers, proper belt tension is maintained automatically by springs, weights or air pressure. A simple adjustment at the front of the lathe maintains belt trackage. Conversion to the backstand-belt method does not necessitate discarding present polishing equipment. All that is necessary is to equip a presently used polishing lathe with a contact wheel and install a backstand unit.

Backstands and Idlers—Backstand idler units are available in three different types: Wall model, floor model and a type consisting of two pulleys supported vertically one over the other by an appropriate supporting frame. Wall and floor models are especially suitable because of easier and more accurate belt tracking. The advantage of the other type is in its ability to obtain necessary belt length without taking up a lot of valuable floor space. Backstand units of all three types are made by several leading machinery manufacturers. The units are carefully machined and balanced to provide a vibrationless operation, quick belt alignment, and uniform belt tension.

Backstands should be capable of operating at the highest practical speeds on any particular operation. Since the amount of metal removed is in direct ratio to the speed of the abrasive belt, size of the particle and the pressure applied, a belt operating at high speeds can use a coarser grit with less pressure to remove the same amount of metal.

And, a coarser grit may be used at higher speeds for a finish previously obtained by a second operation. A coarse grit belt will last longer than a fine grit belt, too. The idler backstand assembly selected is generally dependent upon the width of coated abrasive belts used, together with the type of work being done.

(To be continued)

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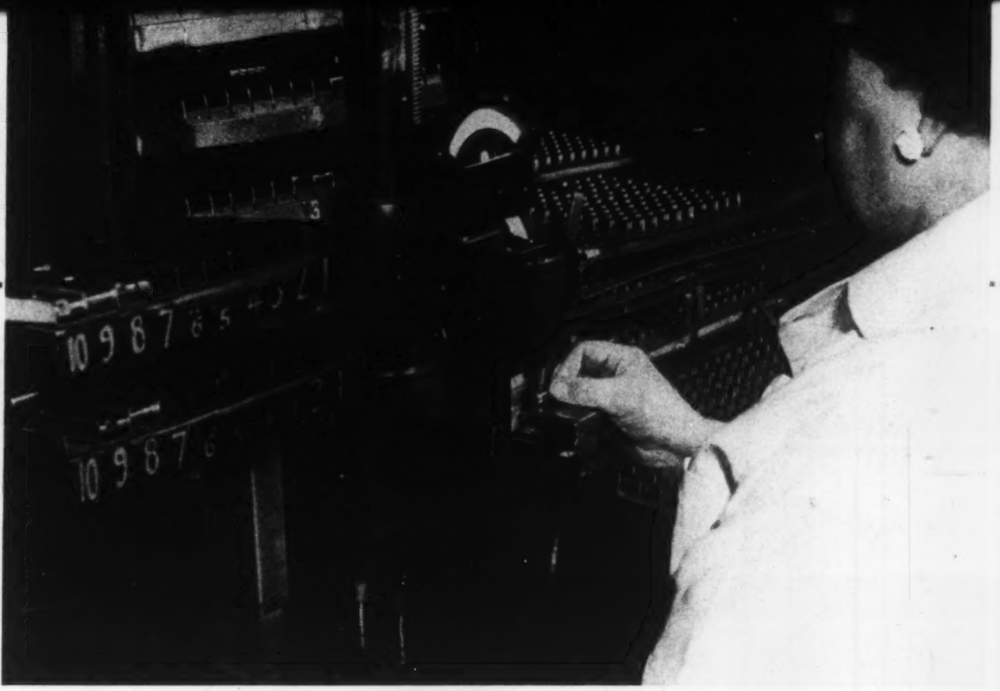
1. Based on demonstration and information presented to Buffalo Branch, American Electroplaters' Society by Carborundum Co., Niagara Falls, N. Y. (Nov. 1949)
2. Oathout, E. E., Behr-Manning Corp., Troy, N. Y. "Abrasive Belt Polishing"—A paper presented at the 37th Annual Convention American Electroplaters' Soc. (1950)



Before — Manual gaging of pistons and wristpins was a fatiguing, slow operation subject to human error. Here the wristpins are gaged one at a time

AUTOMATIC SORTING

Speeds Piston and Wristpin Production

Refrigerator compressor parts are gaged electronically by a fast classifier that eliminates manual methods entirely

AN ELECTRONIC "brain" that gages and sorts refrigerator compressor pistons and wristpins is slashing rejects 35 per cent at Westinghouse's East Springfield, Mass., plant. By its ability to sort the parts in gradins equal to 0.0001-inch, the automatic classifying gage makes possible a more liberal work tolerance for machining operations. A variation of plus or minus 1/100,000-inch for each gradin is within the classifier's accuracy.

The former manual gaging of pistons and wristpins was a fatiguing, slow operation subject to human error. The new electronic classifier, made by Federal Products Corp., Providence, R. I., eliminates these conditions and makes possible faster operation and lower cost production.

Pistons are sorted into 16 sizes, plus over and undersize rejects, wristpins into 10 sizes.

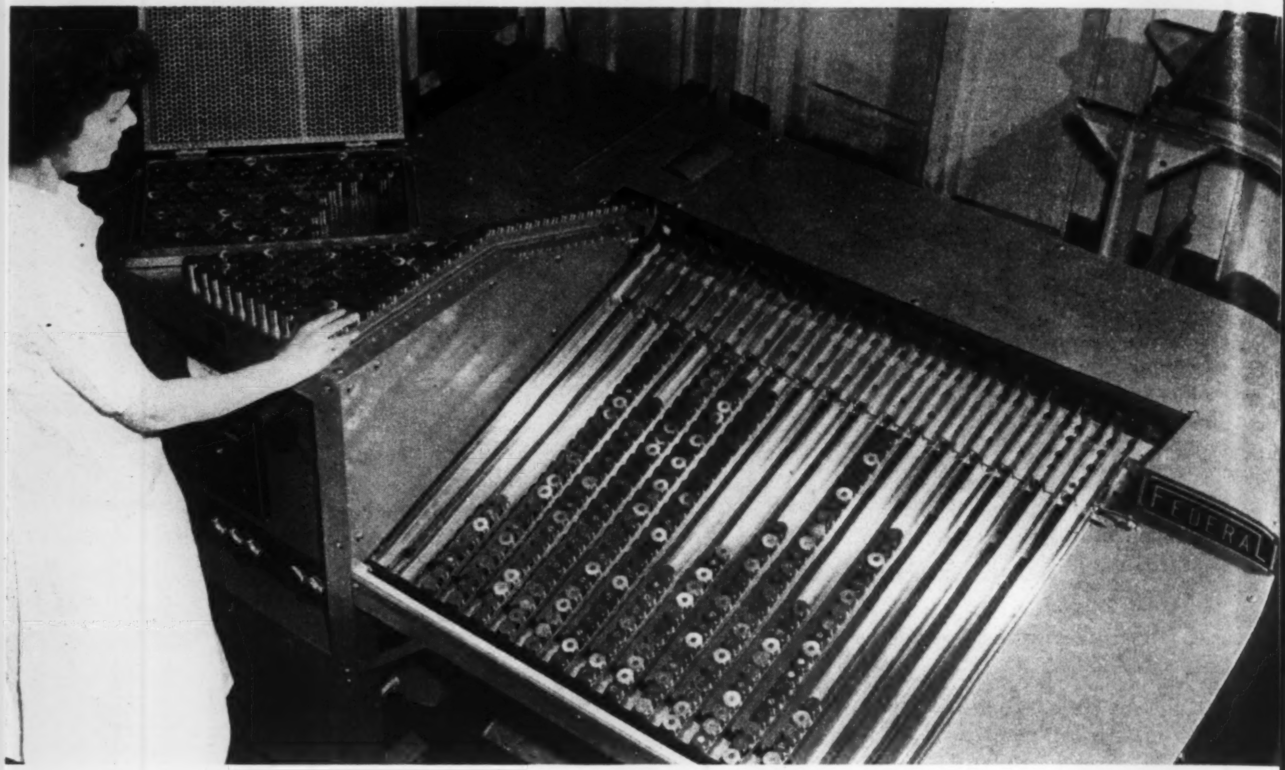
Chute-Gage-Chute — The electronic sorting unit is manually loaded. As the pistons are taken from the tray, the inspector makes a quick visual examination for possible damage or particles of dirt. He then places the pistons in the feed chute leading to the motor-operated reciprocating push rod located at the lower end of this chute. Once a piston is in position, the push rod advances and moves the piston through the gaging area.

The gage consists of a Norbide-tipped reference anvil and a movable gaging anvil that is a part of the electronic circuit. Size is determined as the piston passes the gage area, and the electric impulse is transmitted to the 18-station electronic classifier.

Trap Doors and Microswitches—As the push rod continues forward, the piston slides from the metal supporting surface to a conveyor belt that carries it to its particular disposal chute. As soon as the size signal is transmitted to the classifier, the proper solenoid and trap door are set in motion. If the signal from the gage head picks up the diameter of a piston for gradin No. 5, the solenoid for trap door No. 5 is energized and rotates the door into position. When the piston reaches the open trap door, it is guided off into disposal station No. 5 and slides down the chute.

On the back stroke of the push rod, a microswitch is tripped and the circuit recycled preparatory to measuring the next piston coming down the feed track. Since the travel of the push rod is continuous in a reciprocating motion, the piston does not stop in the gaging position, but is gaged in a through pass.

25 Pistons Per Section — Each of the 18 chutes holds 25 pistons. The chutes are easily removed; pistons are stored in them until ready for assembly. Extra empty chutes replace the full ones. Classification numbers are at the foot of the chutes for both pistons and wristpins. A shield to cover either group of numbers avoids possible confusion between



After—Operator loading an automatic gage. Pistons are graded electronically in 16 sizes, and sorted into the proper chutes

piston and wristpin classification numbers. Ahead of the removable chutes are shorter sections of permanently fixed chutes which allow an overflow of five pistons after the removable chute is filled.

When the fifth piston in this overflow chute is in position, a photoelectric cell actuates a locking mechanism and stops the conveyor belt. The operator then removes the full chute and replaces it with an empty one. When the starting button is pressed, the locking device is automatically released, allowing the five pistons in the overflow chute to slide down into the empty chute.

Easier Inventory Control—Distribution charts for inventory purposes assist in keeping the sizes of pistons balanced with cylinders of equal sizes. As a matter of convenience, both cylinders and pistons are permanently marked with the proper category number. The assemblers need only match number with number, for example, No. 5 piston with No. 5 cylinder. This arrangement automatically establishes the proper fit or wall clearance for best operating performance and efficiency of refrigerator compressors.

Track-Fed Wristpins — Wristpins are handled much the same way. The feeding arrangement consists of a specially-designed chute or feed track. The reciprocating push rod actuates a release mechanism at the end of the feed track. This push rod and stage are different in design from those used for the piston, but only five minutes are needed to make the change from pistons to wristpins.

Wristpins are sorted in ten sizes, plus over and under sizes. Filled chutes are emptied into stainless steel containers which carry identifying numbers for respective size wristpins. Wristpins and connecting rods are later matched according to category.

Thread Roller Reduces Cost 50%

Thread rolling savings have amounted to over 50 per cent of the total cost of the bolts and studs, since an A32 cylindrical die thread roller was installed in the shops of Eddystone Division, Baldwin Locomotive Works, Eddystone, Pa. Used for rolling class 5 threads up to 1⅝ inches in diameter on cylinder head studs and connecting rod bolts used in diesel locomotive engines, the machine, made by Reed Rolled Thread Die Co., Worcester, Mass., is said to hold pitch diameter tolerances because of accurate thread form, lead, taper and roundness provided by the thread rolling process.

The savings, reportedly sufficient to pay for the machine in two months, have been made possible on the studs by rolling of the threads, using round bar stock of diameters smaller than previously used and eliminating undercutting of the portion of the stud between threads. Connecting rod bolts were redesigned for rolling with costs reduced as much as 67 per cent.

Advantages claimed include production of a thread with a high degree of surface finish, giving greater contact of the external thread with the mating part. The uniformity with which exacting tolerances are maintained offers an accurate fit of each stud in the cylinder block and reduces inspection and assembly cost, the company reports.

Beryllium Powder Compacts Reduced 9% by Cold Rolling

One answer to beryllium's traditional lack of ductility at room temperatures may be powder metallurgy. The metal's commercial importance stems from its low density, good corrosion-resistance, high relative strength and nuclear properties

VACUUM-SINTERED beryllium powder compacts can be reduced 9 per cent in thickness by cold rolling. Compacts can be hot rolled readily over 80 per cent reduction. These are two conclusions reached by Henry Hausner and Norman Pinto as reported in their paper, "The Powder Metallurgy of Beryllium," at the recent National Metal Congress, Chicago.

Beryllium powder can be compacted at room temperature without difficulties and no binder is necessary to form compacts. To obtain a material of fairly high density, the researchers found, the beryllium compacts may be sintered in a high vacuum or in a protective atmosphere, such as argon, at temperatures below the melting point of beryllium.

Other conclusions: Sintered beryllium compacts reveal microstructures of equiaxed grains and random orientation. Beryllium sintered in vacuo reveals measurable ductility, whereas argon-sintered beryllium compacts are brittle.

Where Is It Used?—Beryllium metal, Hausner and Pinto pointed out, is of considerable commercial importance because of its mechanical, chemical and nuclear properties. Its low neutron capture properties, together with other properties, make the metal useful in the construction of nuclear reactors.

This metal may well find extensive use in particular applications because of its low density, good resistance to corrosion and high relative strength. Its strength-to-weight ratio, the authors maintain, is significantly superior to those of other engineering materials such as aluminum, magnesium, titanium or stainless steel. However, beryllium as now produced appears to lack room-temperature ductility.

Tests conducted by Hausner and Pinto indicated that vacuum-sintered beryllium bars 0.125-inch thick can be bent without fracture about a radius of 1.9 inches. This corresponds to an elongation of the outer fibers of about 6.9 per cent; cold rolling of these specimens was possible.

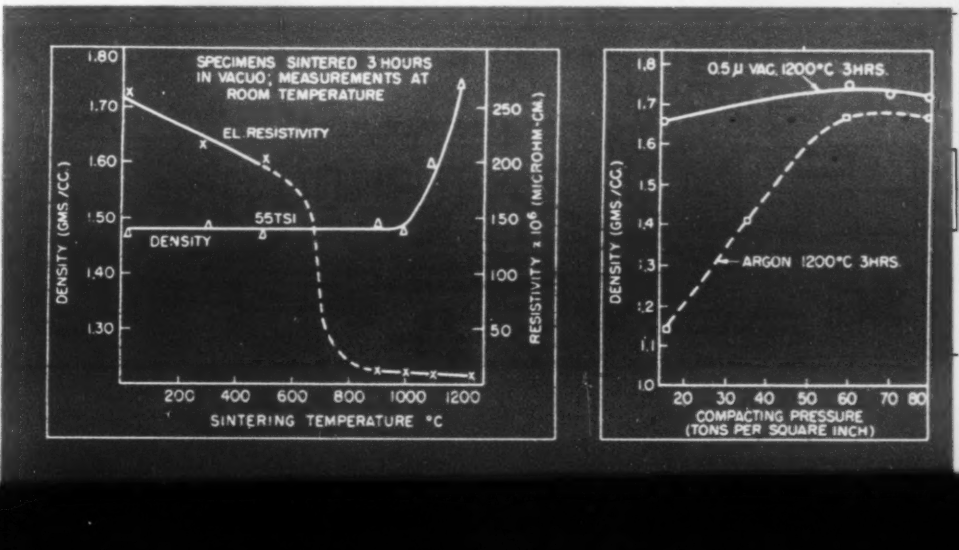
Vacuum-Produced Ductility — Beryllium compacts of like dimensions sintered under similar temperature and time conditions but in an atmosphere of highly purified argon could not be bent or rolled to any measurable degree without breaking.

The fact that a slightly porous material could be bent to the degree indicated does not necessarily indicate that the material is ductile. The authors stated that certain porous or fibrous material can be bent or rolled slightly without being ductile because the presence of nonmetallics permits discontinuous cracks without complete bar fracture. Measurement of the electrical resistivities of the vacuum-sintered beryllium bars showed that no cracking occurred on the sample's convex side, so the beryllium in this form is fairly ductile.

More Twinning—The investigators reported that cold rolling affects greatly the microstructure of beryllium compacts. Structure of vacuum-sintered compacts consisted of randomly oriented grains without lines or bands. After a reduction of 1 to 2 per cent (one or two passes through the rolls), structure changed materially and bands were formed which could be recognized as mechanical twins. Further rolling and decrease in thickness of 7½ to 9 per cent revealed increased mechanical twinning and twins on practically every grain.

The bands were mechanical twins which disappeared completely without formation of annealing twins when heated to temperatures over 800° C. Heating to higher temperatures resulted in rapid grain growth.

It was found possible to cold roll vacuum-sintered beryllium still further by the interposition of an intermediate annealing treatment. Annealing time and temperature had to be controlled to avoid excessive grain growth.



Left—Effect of sintering temperature on density and electrical resistivity of beryllium

Right—Comparison of argon-sintered and vacuum-sintered beryllium compacts

Integrated Processing Boosts Conduit Output

Uneconomical backtracking is eliminated in this continuous straight-flow operation at Mahoning Valley Steel. Material traveling at rates of 125 to 200 feet per minute is untouched by workers during stages of fabrication, plating and painting

SUCCESSFUL incorporation of more than a dozen processes into one continuous straight-flow operation highlights Mahoning Valley Steel Co.'s new plant at Niles, O., where electric-welded metallic tubing is produced in conduit trade sizes ranging from ½ to 2 inches OD. These are the operations: Slitting, seam-welding, forming, induction butt-welding, cooling, sizing, shearing, straightening, chamfering and facing, electrogalvanizing, painting, drying, inspecting and bundling.

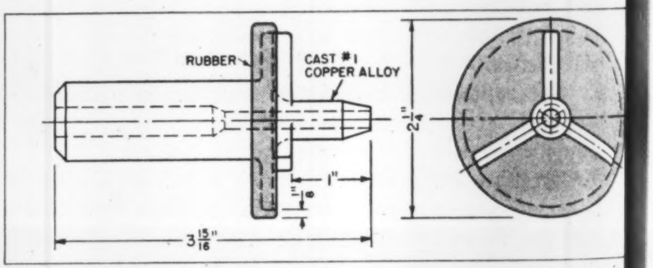
Workmen are not required to handle the material during any of the various stages of fabrication, plating or painting, up to inspection. A Niles-Shepard 10-ton overhead crane handles coils of cold-rolled strip from the incoming railroad cars or trucks to the incoming storage area and from there to the slitter whenever they are scheduled to be cut into appropriate widths for the various sizes of conduit produced at the plant. The crane also transports material from the slitter to the tube mill storage area until required at the uncoiler. From that point the material is handled automatically through all operations until the finished product is bundled at the opposite end of the plant. There the crane removes the bundles to storage to await shipment to the construction materials department of General Electric Co. which distributes the product to the ultimate consumer.

A Model of Efficiency—Designed to operate at speeds of 125 feet per minute for 2-inch material up to 200 feet per minute for ½-inch material, the line is a model of efficiency and automatic operation, employing the latest equipment of its type available.

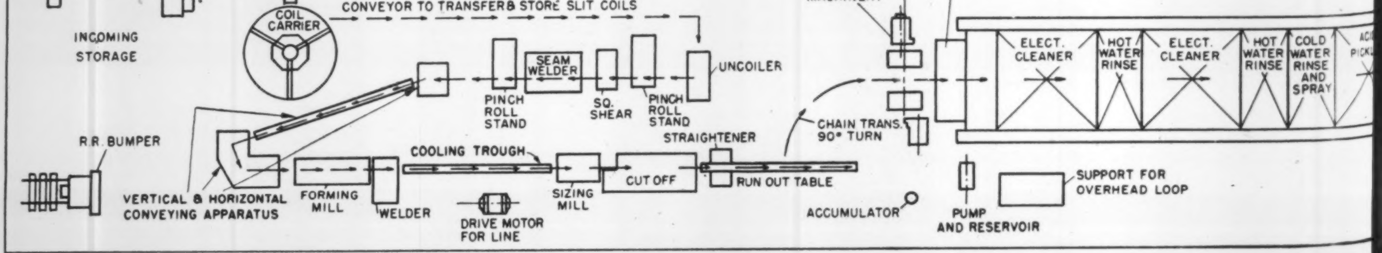
Conduit is produced in commercial 10-foot lengths from cold-rolled strip as specified by the Electrical Underwriters' Association. Material can be used in various widths up to 36 inches from 0.042 to 0.065 (inch) gage.

The Yoder slitter has a 36-inch width capacity, handles material up to 0.125 gage and consists of an uncoiler, a slitter and scrap chopper and a recoiler. Slit material from the recoiler is handled by a Stamco 360-degree coil unloader from which the steel is removed by overhead crane and placed in the tube mill storage area.

Slit cold-rolled strip of the proper width is placed in an uncoiler which is actually the beginning of the fabricating and plating line. It then passes through a pinch-roll stand, a squaring shear and a seam

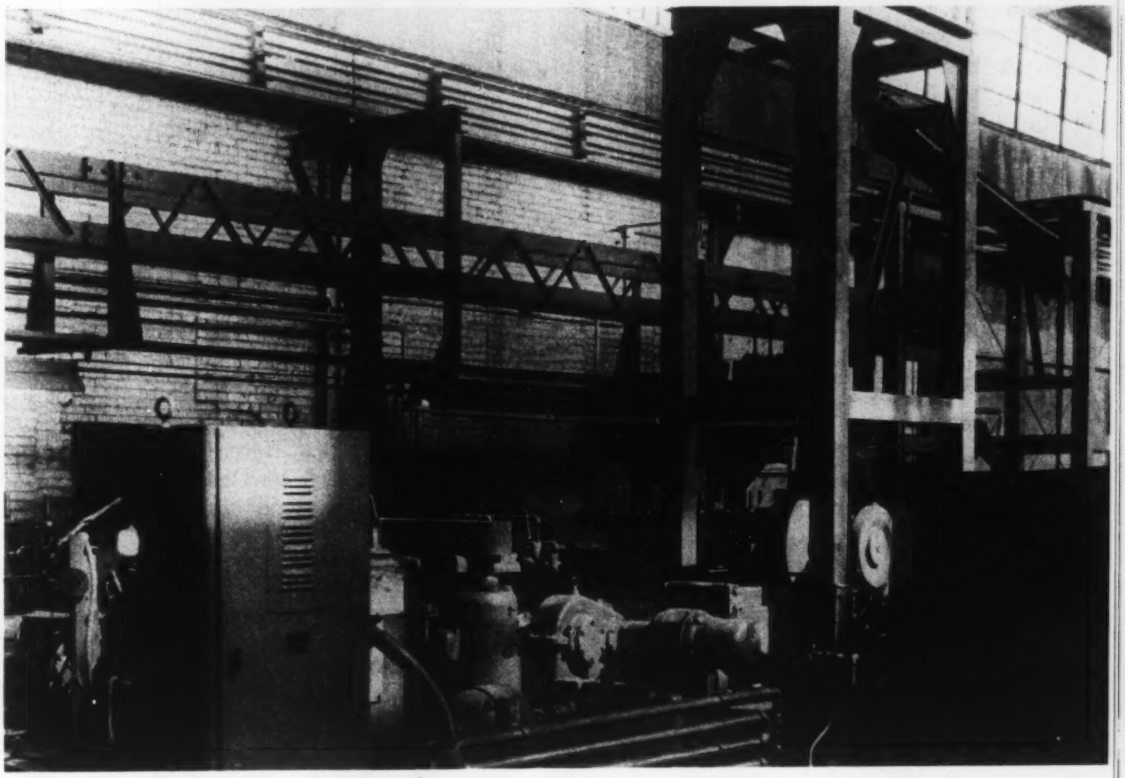

RUBBER
CAST #1 COPPER ALLOY
2¼"
1"
⅛"
3 15/16"

These novel pins used on the traveling arms hold the tubes during cleaning, pickling, and plating. They are made of a No. 1 cast copper alloy having rubber covered end faces


UNCOILER
SLITTER & SCRAP CHOPPER
RECOILER
TUBE MILL STORAGE
CONVEYOR TO TRANSFER & STORE SLIT COILS
COIL CARRIER
INCOMING STORAGE
PINCH ROLL STAND
SEAM WELDER
SQ. SHEAR
PINCH ROLL STAND
UNCOILER
R.R. BUMPER
COOLING TROUGH
STRAIGHTENER
VERTICAL & HORIZONTAL CONVEYING APPARATUS
FORMING MILL
WELDER
DRIVE MOTOR FOR LINE
SIZING MILL
CUT OFF
RUN OUT TABLE
FACING MACHINERY
LOAD
CHAIN TRANS. 90° TURN
ACCUMULATOR
PUMP AND RESERVOIR
SUPPORT FOR OVERHEAD LOOP
ELECT. CLEANER
HOT WATER RINSE
ELECT. CLEANER
HOT WATER RINSE
COLD WATER RINSE AND SPRAY

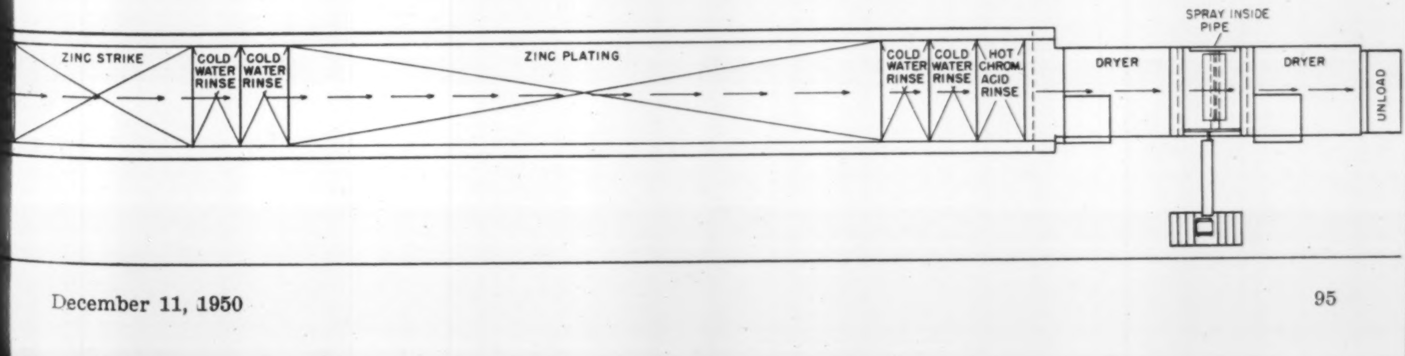
By DAN REEBEL
Associate Editor, STEEL
Photography by the author

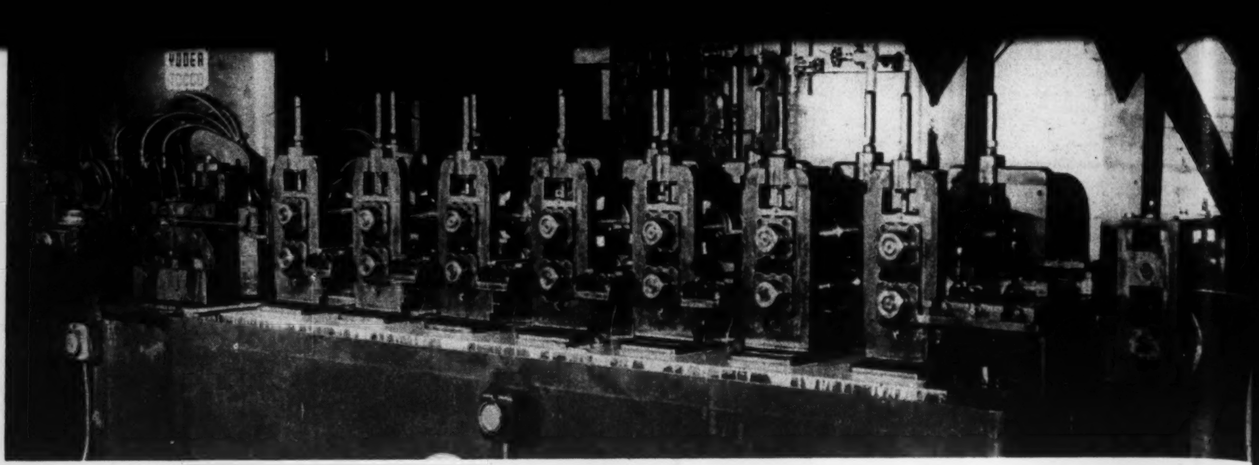
Cold-rolled strip up to 36 inches wide is slit into the proper widths for the various sizes of conduit being fabricated



Back side of the seam welder for joining ends of successive coils being fed to the line. Note the 4-level storage loop in background. It enables continuous operation while welds are made

General plan of the continuous EMT conduit line


ZINC STRIKE
COLD WATER RINSE
COLD WATER RINSE
ZINC PLATING
COLD WATER RINSE
COLD WATER RINSE
HOT CHROM. ACID RINSE
DRYER
SPRAY INSIDE PIPE
DRYER
UNLOAD



Strip enters this 7-stand forming mill at right. After being bent into a tubular shape it is induction welded in the unit shown at left

Right—After welding and cooling in a water trough, the tube is sized in this 3-stand mill. The automatic flying saw is seen at left

welder in which the coil ends are welded together to afford a continuous supply of strip for the line. Then it goes into another pinch-roll stand, finally being conveyed to an overhead 400-foot storage loop. The facility is 100 feet long, contains four levels of moving strip that enables continuous operation of the line while a new coil is being welded to the end of the preceding coil.

At the Push of a Button—The welder was designed and built by Resistance Welder Corp.; auxiliary equipment was designed and produced by Yoder Co. The 100-kva mash seam-welder is automatic—a worker merely positions the strip and pushes a button to effect a mash seam-weld in approximately 2 seconds. As a general rule, the resulting weld does not require any further processing, but if flash requires removal, a deburring shear is available.

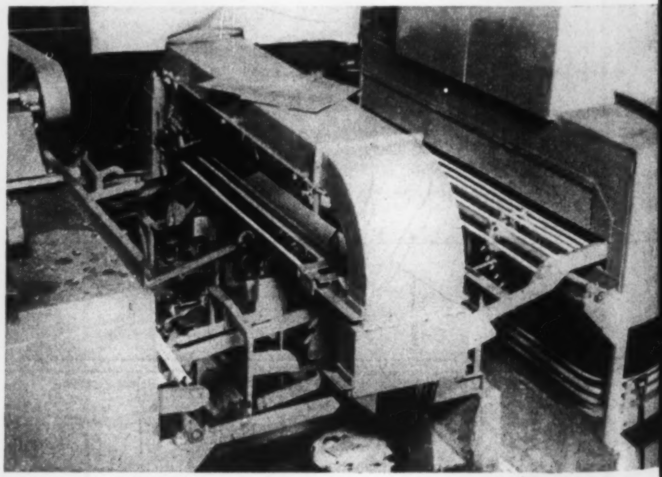
From the loop then, the next step in the operational sequence occurs when the material enters the 7-stand Yoder M-2 tube mill that forms the strip into the proper shape of tube. The open-seam tube then enters the Yoder-Tocco electric induction welder. At that point strip edges are heated by induction to a temperature suitable for welding and a pair of squeeze rolls forge the weld into a smooth finished surface. Principal feature of the induction welder: There is no electrical contact necessary at the point of heating, which eliminates the additional maintenance caused by electrode wear and miscellaneous rotating parts. The induction unit is fed by two General Electric, 9600 cycle, 800 volt generators, driven by two 150 hp induction motors controlled by two amplidyne units.

No Sharp Internal Burrs—The induction welding process and its resultant weld zone condition is an outstanding feature of the continuous line. Induction welding makes it possible to obtain a joining free of sharp internal burrs. Expensive hammering devices and other internal flash removing techniques normally employed are not necessary.

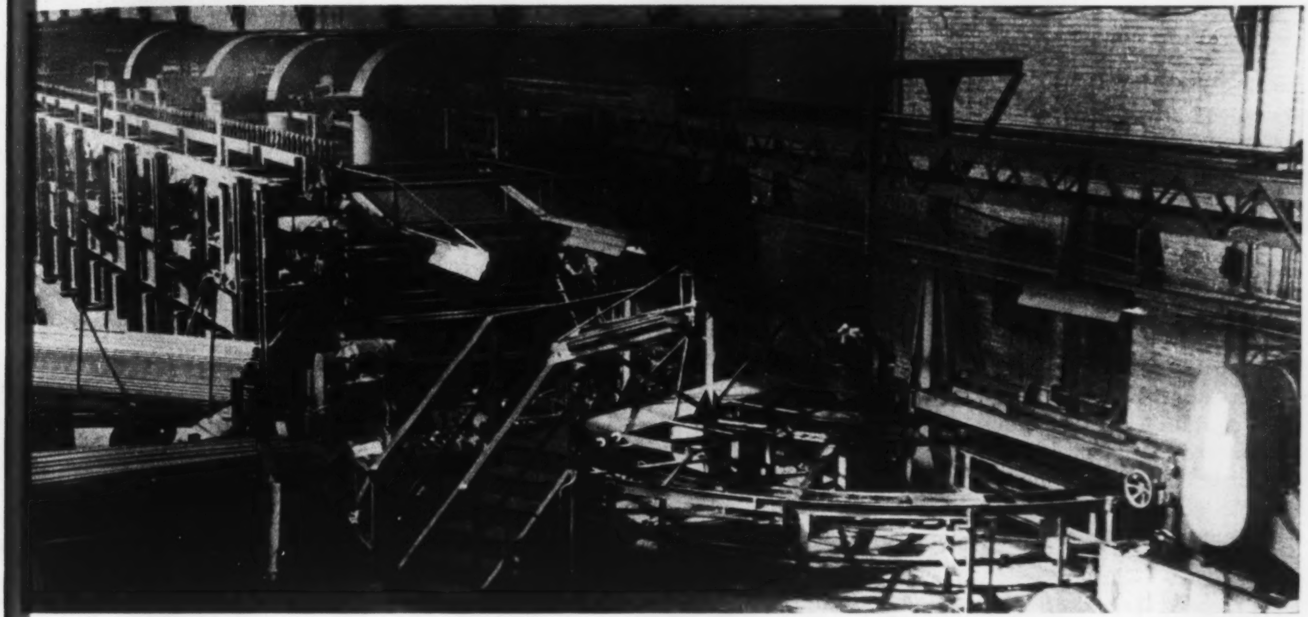
After welding, the material moves into an 8-foot-long water cooling-trough which is divided into two sections. The first portion sprays the material; in the second section it receives a submerged bath. Next the formed conduit moves into the Yoder 3-stand sizing and straightening mill which produces a concentric tube of exact diameter.

From the sizing and straightening section, the tube then goes into the Yoder automatic flying saw which cuts and holds the tube's length tolerance to within ¼-inch of specification. This saw also is a specially engineered feature of the line: It has a fixed-length stroke and will cut 10-foot lengths at a relative degree of accuracy, that is, the total tolerance of ¼-inch. Accuracy in tolerance is obtained through a metering device that insures the virtual exact-matching of tube speeds with the motion of the saw head, resulting in the extremely accurate cutting-off of the tube without the use of mechanical triggers or other extraneous means.

No Handling Required — Material then moves through a Sutton 5-roll pipe straightener and on to a runout table where it is kicked off onto an Alvey-Ferguson chain-type transfer. It moves the pipe 90 degrees and deposits it piece by piece on a rack feeding into two Pipe Machinery chamfering and facing units. Here the material is gaged, reamed on the inside, beveled or chamfered on the outside and inside edges and faced on the end to tolerances as

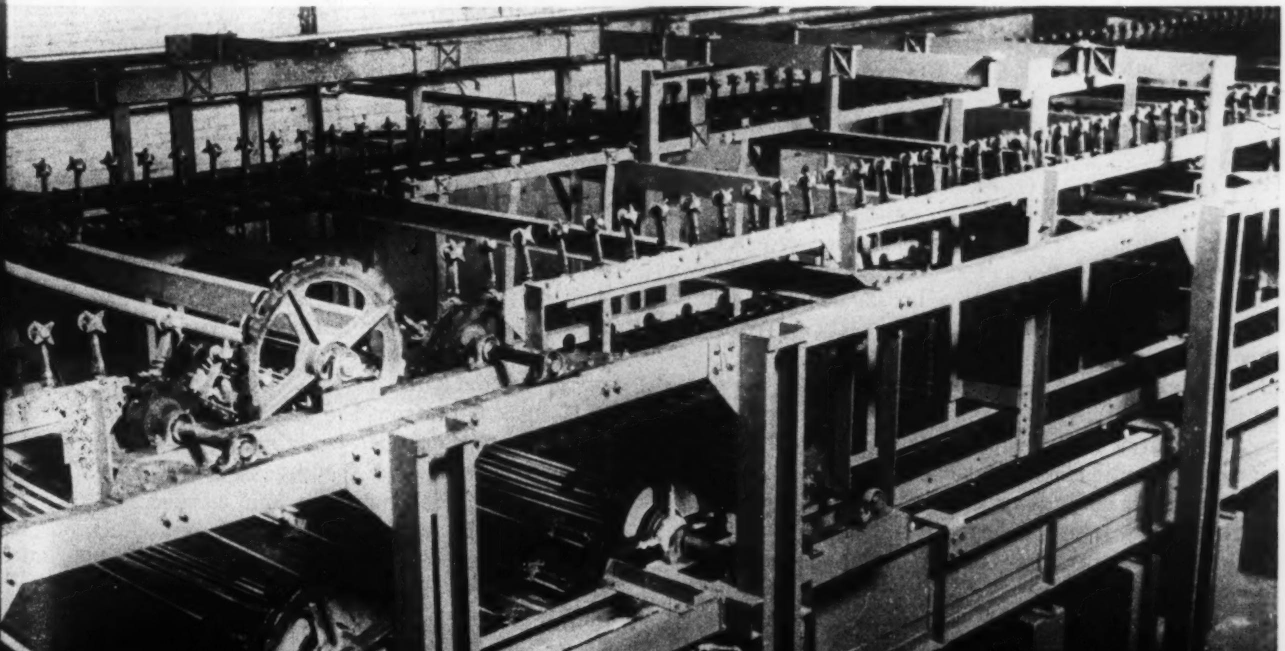


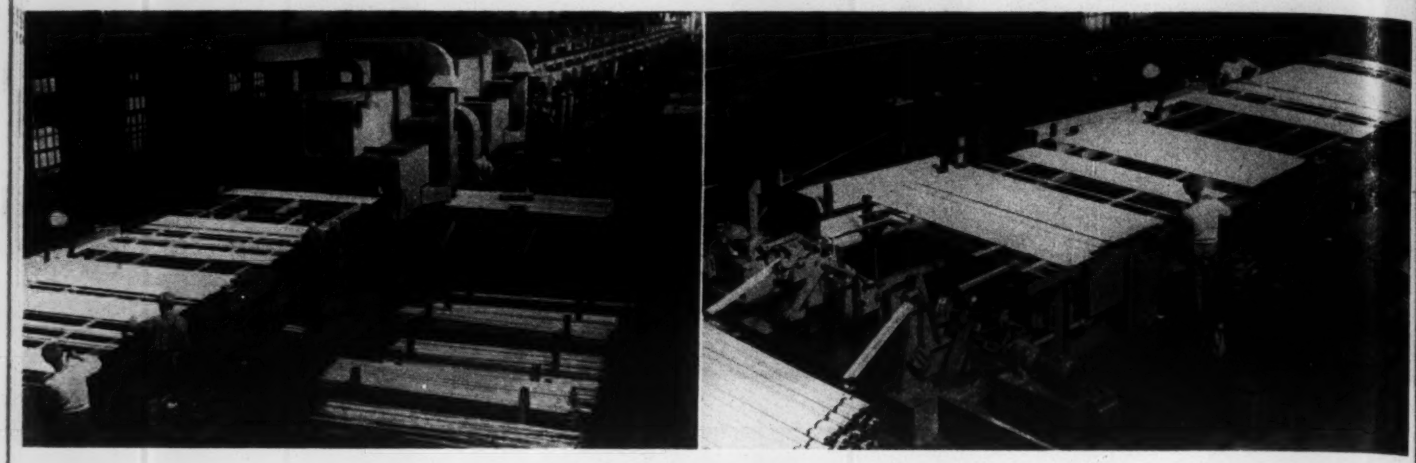
At this painting station galvanized conduit receives a thorough inside paint job. Three lengths are handled simultaneously



Above—Entry end of the plating portion of the line showing 90-degree pipe transfer which moves material from runout table connected to straightener

Below—Bird's eye view of the zinc strike bath showing method that is employed for conveying pipe through the plating baths





After painting the finished conduit is dried and given a visual inspection on tables in photo at left, proceeding on to the bundler shown above

specified by the Underwriters' Laboratories. The equipment is entirely automatic; as soon as the tube has been processed it is conveyed up to the loading station of the plating equipment.

The plating and painting portion of the line was built by Hanson-Van Winkle-Munning Co. and utilizes a newly designed type of travelling arm having pins on the end which extend into the pipe ends. They automatically pick up the tubes and handle them completely through the remainder of the galvanizing operation until ready for painting.

Material first moves into an electrolytic cleaning tank containing an alkaline cleaning solution, then into a hot water rinse tank and on into a second electrolytic cleaner tank very similar to the first bath. Next, a hot water rinse is used followed by a cold water spray rinse after which pipe is pickled in a sulphuric acid bath of about 20 per cent concentration.

Cold Baths—Next follows a submerged cold water rinse, then a cold water spray rinse to thoroughly clean the material before it enters the electrolytic zinc strike bath employing a standard cyanide solution. After the first plating, material goes through two different cold rinse tanks where it is completely submerged and thoroughly washed.

Next tank contains the electrolytic zinc chloride plating bath employing a slightly acid solution and standard bar-type zinc anodes which make up the bed of the bath. These bars are laid horizontally side by side and are continuous over the entire bottom of the tank. Thickness of the zinc coating is 0.001-inch.

After receiving its final zinc plating, the material goes through two cold-water rinse tanks and then into a hot chromic-acid rinse tank held at approximately 180° F. In the next operation, a de-ionized water spray that was designed by Mahoning Valley's engineers is used to reduce the incidence of water stain on the material. After that the pipe moves through a gas drier held at about 400° F for approximately 2 minutes after which it rolls on down into the spraying station where its interior surface is painted with a material supplied by GE. Three pipes are painted simultaneously by use of long extension arms containing a paint spray gun on the end. They are first inserted the length of the pipe and on their return trip evenly spray the inside surface. That, too, is entirely automatic.

On the Cooling Table: Inspection—The pipe then is kicked off and conveyed into another gas drier where it is retained for a 5-minute period. After that, the conduit rolls down a slightly inclined cooling table where operators inspect both the outside zinc coating and the inside painted surface. The table is almost 30 feet long; at its end is located a Guide bundler with a counter that may be set to segregate any desired number of pieces and bundle them with a heavy black 3-M adhesive tape.

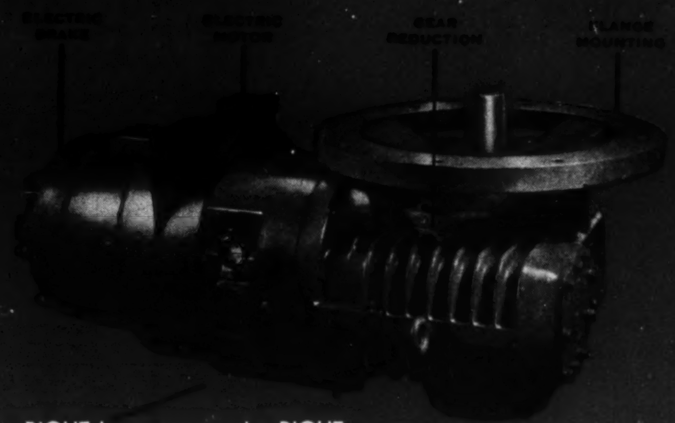
As material progresses from tank to tank in the plating area it is moved slightly off the horizontal position because the conveying chain moving the conduit carriers travels over matching upper-idler sprockets having the same diameter but which are elevated higher on one side than on the other. That facilitates the complete draining of the various solutions back into their respective baths before the material descends into the next and adjoining tank. Large exhaust ventilation fans, connected to hoods placed above tanks where fumes are created, keep the entire plant's atmosphere clear.

The entire electrical system is connected to a GE 2000-kva double-ended unit substation capable of handling 23,000 to 440 volts. All 440-v ac controls are GE Milltrol starters and direct current used for the electrolytic plating and cleaning portion of the line is furnished by GE water-cooled copper-oxide rectifiers rated 71,000 amp at 6, 12, and 15 volts.

Feeder Desludges Coolant

Recently, a large manufacturer was having trouble with steel filings and abrasive grains filling up the coolant tank of its grinders. In order to remove this material, Syntron Co., Homer City, Pa., designed a vibratory screening feeder for installation on the edge of the coolant tank.

Used coolant from the machine tool is run through the vibrating screen, catching the steel filings and abrasive grains and feeding them as sludge into a receptacle. The desludges and cleaned coolant goes back into the storage tank for reuse. According to this company, use of the screening feeder eliminates a 30-minute period at the end of each shift formerly required for cleaning the coolant tank.



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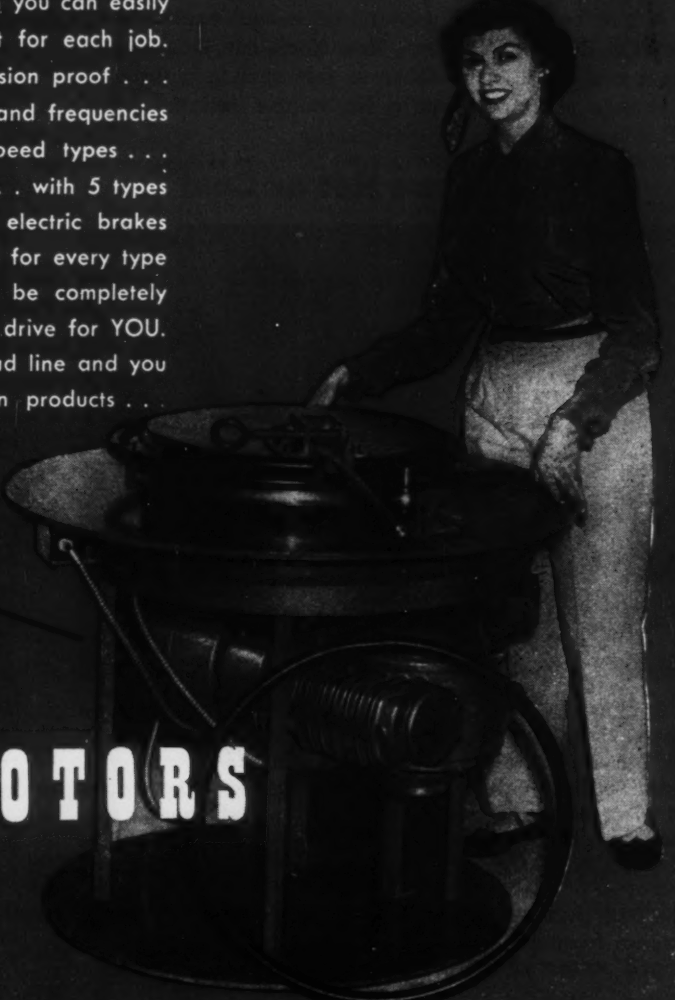

THE MASTER ELECTRIC COMPANY
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MASTER GEARMOTORS

Improved Control Devices Highlight Power Show

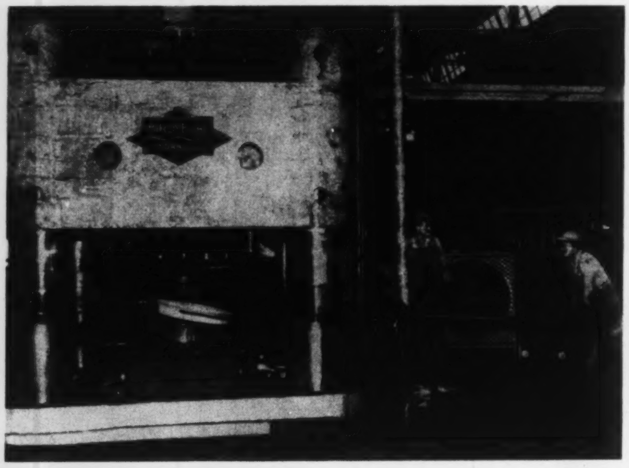
FAULTY combustion got a black eye at the Power Show in New York's Grand Central Palace, Nov. 27-Dec. 1. New ideas in power plant engineering, advanced methods and equipment for treating fuel, improved grates, fireboxes and refractories, more efficient burners, blowers, draft equipment, control instruments and smoke prevention devices revealed by many of the 300 exhibitors, indicate that the current fuel conservation and smoke abatement battles are going to see some new weapons in action.

Combustion engineers visiting the 19th National Exposition for Power and Mechanical Engineering, known simply as the "Power Show" and held under auspices of the American Society of Mechanical Engineers, came away with plenty of new ideas on how to get more heat out of fuel and more work out of the heat.

Since the last show two years ago, advances have been made in instruments and controls for indicating and recording temperatures, pressures, liquid levels, rates of flow, weights and measures and chemical analyses. Most spectacular advances are those involving remote indication and control. Some of these have placed process control and even the operation of an entire power plant literally under fingertip control.

A new combination gas and oil burner exhibited by Ray Oil Burner Sales Inc., New York, can be switched from one fuel to the other in less than a minute by a change of nozzles and a flip of the switch.

Press Forms Hot or Cold



Designed originally for cold rubber-pad forming of sheet metal parts used in airplane frame construction, this 5000-ton hydraulic press built by Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., is now making hot-forged parts for earthmoving equipment. R. G. LeTourneau Inc., Longview, Texas, is using it to forge tire retainer rings for 21 x 25 tires from SAE 1035 steel, as well as for axles and other parts. Four column press is of single action type, with both pushbutton and sensitive manual control. Quick reversal feature minimizes wear on dies by avoiding prolonged contact of dies with hot metal.

Wheelco Instruments Co., Chicago, showed a control system based on a photoelectric cell whose resistance varies with the luminosity and spectral characteristics of the flame. The system permits a single base model and standard wiring and control units to regulate operating sequences and timing. Safer starting and stopping and operation of oil and gas-fired equipment are other advantages.

Grime Does Not Pay—A new type collector for small boilers and an electrical precipitator were exhibited by Buell Engineering Co., New York. This company also showed some high efficiency equipment for power plants ranging from 200 boiler horsepower to the largest boiler made.

Another type of collector, exhibited by Aerodyne Atlantic Corp., New York, has a self-cleaning feature. The device consists of one or more cones formed with a great number of small louvers on the surface, shaped to set up a counterflow current on the outside of the cone. Large dust particles are separated mechanically by this unit, while finer particles are held in suspension and carried through to the collector outlet, as clean vapors escape through the louvers.

A "robot-eye" device that automatically cuts down smoke by regulating the air supply to the fire was shown by General Power Plant Corp., New York. The control watches boiler waste gases; when the air-fuel ratio varies from standard it changes the air flow to correct the condition. The system is suitable for large boiler installations as well as to small heating-type boilers.

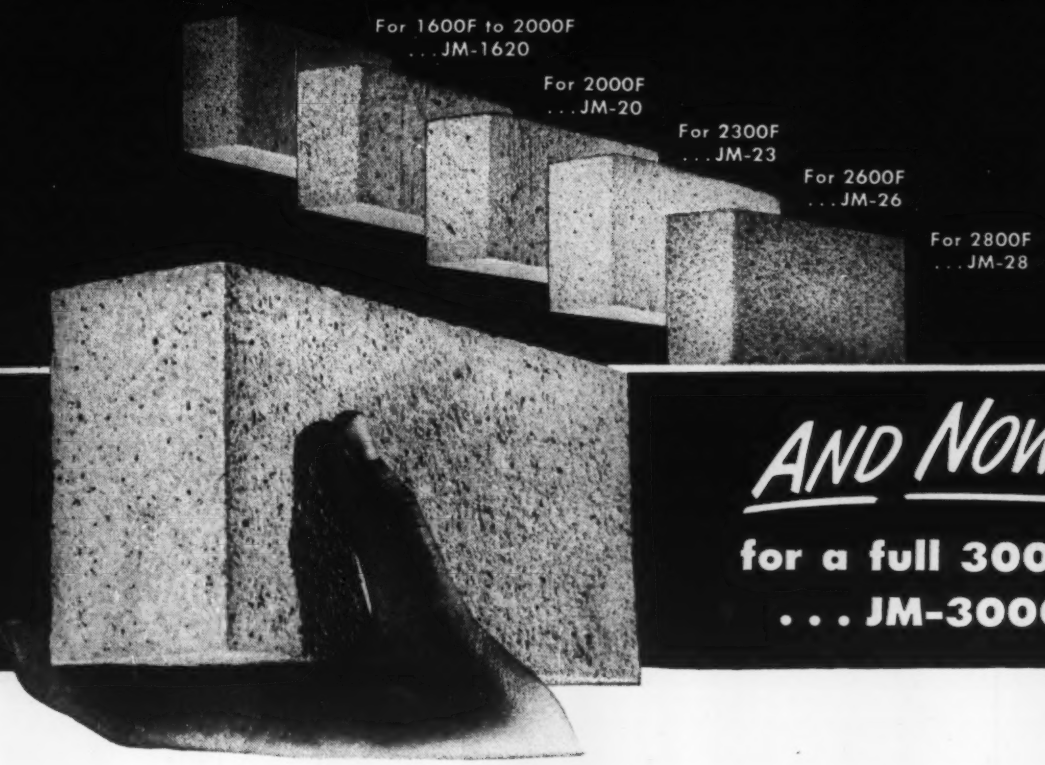
Prat-Daniel Corp., East Port Chester, Conn., made a frontal attack on the serious problem of fly ash from spreader stokers, with a new type collector. As contrasted to common coal dust, fly ash consists of air borne dust particles, which may be deposited in objectionable quantity over areas near the source. The Prat-Daniel collector breaks down the over-the-fire dust into two classes by decantation. One class of the concentrate in combustible material is reinjected into the combustion chamber. The small particles are decanted into a storage hopper for final disposition.

Withstands 1500 psi—Other exhibits at the show included stainless steel assemblies for jet aircraft and flexible high-pressure pipeline expansion joints capable of withstanding pressures up to 1500 psi. Latest advances in high-pressure, high-temperature cast steel valves for steam service were shown by another manufacturer. These are sealed by internal pressure, stay tight under all operating conditions.

A new application of the magnetic fluid principle was demonstrated by Magnetic Fluid Corp., Maplewood, N. J., and by Vickers Electric Division, Vickers Inc., St. Louis. The principle employs the well-known tendency of finely-divided magnetic materials such as iron filings to arrange themselves in a definite pattern when magnetized. The new idea is to mix fine iron powder with a light oil. The mixture looks and feels like dirty oil, but when magnetized it thickens into a tough semisolid as the iron particles become linked into chains which solidify the mass.

One application of this principle led to the in-

MEET the family of Johns-Manville Insulating Fire Brick . .



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By taking advantage of the quick heating characteristics of these insulating fire brick, you'll benefit through important savings in fuel because of the quicker rise to proper operating temperature in the furnace. This is a result of the low heat storage capacity and low thermal conductivity characteristics of the brick. These factors are especially important where furnaces are being intermittently operated.

The same materials can also be obtained in large size units as Johns-Manville Insulating Fireblok. This product has many advantages over the smaller size fire brick, from both a construction and stability standpoint. They can be quickly applied because they are easy to cut and fit. J-M Insulating Fireblok provide additional heat savings because they reduce the number of joints, and require less mortar for bonding.

Why not have a Johns-Manville insulation expert call to tell you more about ways in which you can save by using these insulations in your furnaces. Write Johns-Manville, Box 290, New York 16, N. Y. for further information.

	JM-1620	JM-20	JM-23	JM-26	JM-28	JM-3000
Densities, lb per cu ft	29	35	42	48	58	63-67
Transverse Strengths, psi	60	80	120	125	120	200
Cold Crushing Strengths, psi	70	115	170	190	150	400
Linear Shrinkage,† percent	0.0 at 2000 F	0.0 at 2000 F	0.3 at 2300 F	1.0 at 2600 F	4.0 at 2800 F	0.8 at 3000 F
Reversible Thermal Expansion, percent	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F	0.5—0.6 at 2000 F
Conductivity* at Mean Temperatures						
500 F	0.77	0.97	1.51	1.92	2.00	3.10
1000 F	1.02	1.22	1.91	2.22	2.50	3.20
1500 F	1.27	1.47	2.31	2.52	3.00	3.35
2000 F	—	1.72	2.70	2.82	3.50	3.60
Recommended Service						
Back up	2000 F	2000 F	2300 F	2600 F	2800 F	3000 F
Exposed	1600 F	2000 F	2300 F	2600 F	2800 F	3000 F

† 24-hr simulative service panel test for JM-3000; 24-hr soaking period for other brick.

** Conductivity is expressed in Btu in. per sq ft per F per hour at the designated mean temperatures.*

Note: Above tests are in accordance with A.S.T.M. tentative standards.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville First in INSULATIONS

vention of an automobile clutch in which the magnetic fluid provides the only connection between driving and driven members.

Another application of the basic idea uses a dry magnetic medium instead of a fluid. The dry magnetic particle clutch is developed for a series of uses in mechanical engineering, as an on-and-off clutch, as a clutch having a controlled slip, and as a brake. Typical application for machine tools is in drilling, tapping and nut-running operations.

Stops, but Quick — In the field of clutches and brakes, Electric Controller & Mfg. Co., Cleveland, showed a control system which converts dc motors in generators to bring them to a quick stop. This system, developed for crane drives, eliminates the mechanical directional switch previously required.

Quality Control Standards Would Reduce Reject Toll

AMERICAN industry is making $3 billion worth of faulty products a year. That is the total cost of rejects annually and it is more than the retail value of all electrical household appliances, including radios and television receivers, produced in one year.

What's more, it's quite a tidy chunk of cash to send down the drain these days when Uncle Sam is tightening his belt for a vital defense production program. In an address at the American Society of Mechanical Engineers 1950 annual meeting in New York, Howard Coonley, chairman of the executive committee of the American Standards Association, called for greater standardization in industry and urged management to take a direct and active interest in quality control.

He said the "magic of standards" would cut down the number of rejects and make for better quality at lower cost. The widespread adoption of standards, he said, would enable the manufacturer to keep track of the effectiveness of his production process by means of a simple quality control chart. The chart would indicate whether things were running smoothly or whether the manufacturer should be alerted for trouble in the production process.

Trial and Error — Mr. Coonley said the development of quality control in industry generally had been a matter of "trial and error, application and misapplication" until 1941 when the first national standards were published. This made available in one source, data which had been developed over the years. However, he declared, there is a need for much greater standardization and widespread use of standards in modern techniques of quality control.

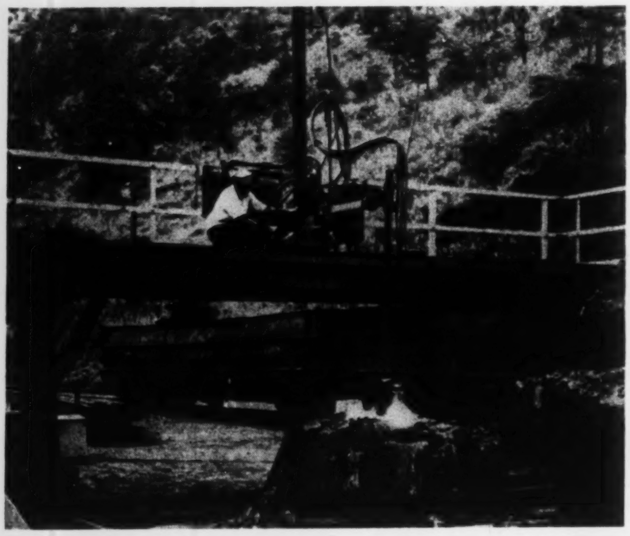
In using a simple quality control chart, "control limits" are computed periodically from quality measurements made on samples of the product at regular intervals of time, for instance, one sample of five units every hour. A unit may be a rivet, a shell fuse or a test piece taken from a textile fabric. These control limits are placed on the chart and the manufacturer keeps on taking samples at regular intervals. Each unit of the sample is inspected and a point representing the quality of the sample as a whole is plotted on the control chart.

So long as the plotted points stay inside the control limits, the manufacturer may reasonably assume that there is nothing in the process that will spoil the quality of the product. However, if a plotted point falls outside the control limits, this is a warning signal for the manufacturer to watch for trouble.

Normally, the control limits are placed inside the manufacturing limits; that is, the limits which each individual unit of the product must meet. Therefore, a plotted line falling outside the control limits on the chart does not necessarily mean that the product will be rejected. However, such a point is a danger signal of trouble that will lead to rejections later on. Naturally, the sooner the manufacturer gets a warning of this kind the greater his chance of catching and removing the trouble early enough to prevent spoilage.

Reduce Pressure—Mr. Coonley said that, after long experience in company operation, he was more and more impressed with the fact that the use of effective standards is one of the most reliable tools an executive can have to reduce the pressure under which he lives. This is accomplished chiefly by cutting down the number of decisions that have to be made through the reduction of innumerable problems of operating routine. Every standard cuts down the number of conferences, on the number of misfires, on controversies in the operation of the plant and on controversies with customers. In most cases, this is brought about by solving the problems in advance so that they never come before the executive for his consideration.

In Jig Time with Blowpipe



Reducing slag-encrusted skulls, spills the ladle buttons to a size suitable for use a heavy melting scrap no longer is a problem in one steel mill since the installation of an Oxweld C-60 powder-cutting blowpipe, machine carriage and track on a gantry rig. Electric motors move the rig to any position over the cutting bed. Carriage moves blowpipe over the work at a predetermined, but adjustable rate of speed. Blowpipe can be raised or lowered as cutting progresses.

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Three-stand cold reduction mill

French Building Two Continuous Hot Strip Mills

MODERNIZATION program of the French steel industry comprises two modern plants for the continuous production of high-grade sheets and tin plate. Plans are being carried out with the assistance of Marshall aid funds and have been approved by the Economic Co-operation Administration of the Organization for European Economic Co-operation.

Each of the new plants includes a continuous hot strip mill and a cold reduction plant of American design. The largest of the two installations is in the course of construction for Societe Loraine de Laminage Continu, formed by a group of nine steelworks and known as SOLLAC. The hot strip mill is being constructed at Seremange, and the cold reduction mill at Ebange, two sites about 2 miles distant, in Lorraine. When completed, in 1952, the estimated output of SOLLAC will be about 600,000 metric tons of finished products per annum as a minimum.

Hot Mill Ready in 1951—The other plant is being constructed for the Union Siderurgique du Nord, known as USINOR. This company was formed by Societe des Hauts Fourneaux, Forges et Aciéries de Denain et d' Anzin and Societe des Forges et Acieries du Nord et de l'Est, for the special purpose of operating the new strip and sheet mills. The continuous hot strip mill for USINOR is expected to be completed in 1951, and is located at Denain in northern France. The cold reduction mill was completed at the end of 1949 at Montataire, some 40 miles from Paris, and regular commercial operation started shortly thereafter. Until the coils for the cold reduction mill can be obtained from Denain, they are being purchased from the United States. When in full swing, it is expected that the output of USINOR in finished products will be 300,000 metric tons per annum.

The cold reduction mill at Montataire can roll down coils to approximately 1/64-inch thick, with a maxi-

Pickling line operates at speed of 328 fpm

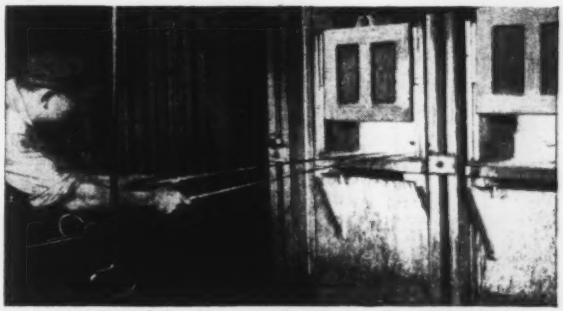
Not One Cent for Maintenance
IN 14 YEARS OF SERVICE

Circular Saw Hardening Furnace after 14 years of service—center door partly open.

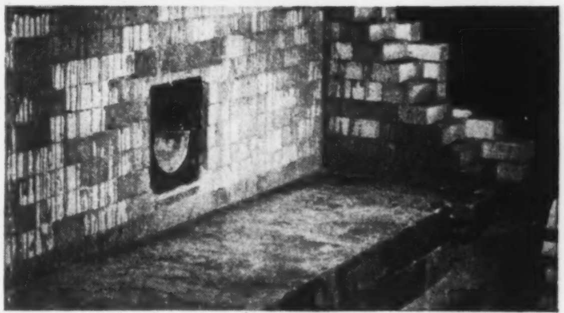
THAT'S THE RECORD of B&W Insulating Firebrick in Henry Disston and Sons, Inc. circular saw hardening furnace. During 14 years, this furnace handled hundreds of tons of high grade steel. *Despite this grueling punishment, the original walls and roof of B&W Insulating Firebrick are still giving excellent service.*

B&W IFB not only made possible continuously high production, but also assured better quality control . . . due to the quick response of this brick to temperature changes. And because B&W IFB have such a very high insulating value, the fuel savings over the 14 year period were appreciable.

Performance pays off. As a result of this performance, Disston has since lined ten more furnaces of different types with B&W IFB. If you, too, want to increase furnace operating efficiency and lower production costs, discuss your refractory problems with your local B&W representative.



One of the three new Bar Heating Furnaces.



New Bar Heating Furnace under construction with B&W Refractories.

Furnace Specifications

Span of arch 13 ft. consisting of 9 in. K-26 IFB

Length of furnace 15 ft. 6 in.

Height of furnace from hearth to top of arch 2 ft. 6 in.

Side walls and doors 9 in. K-26 IFB

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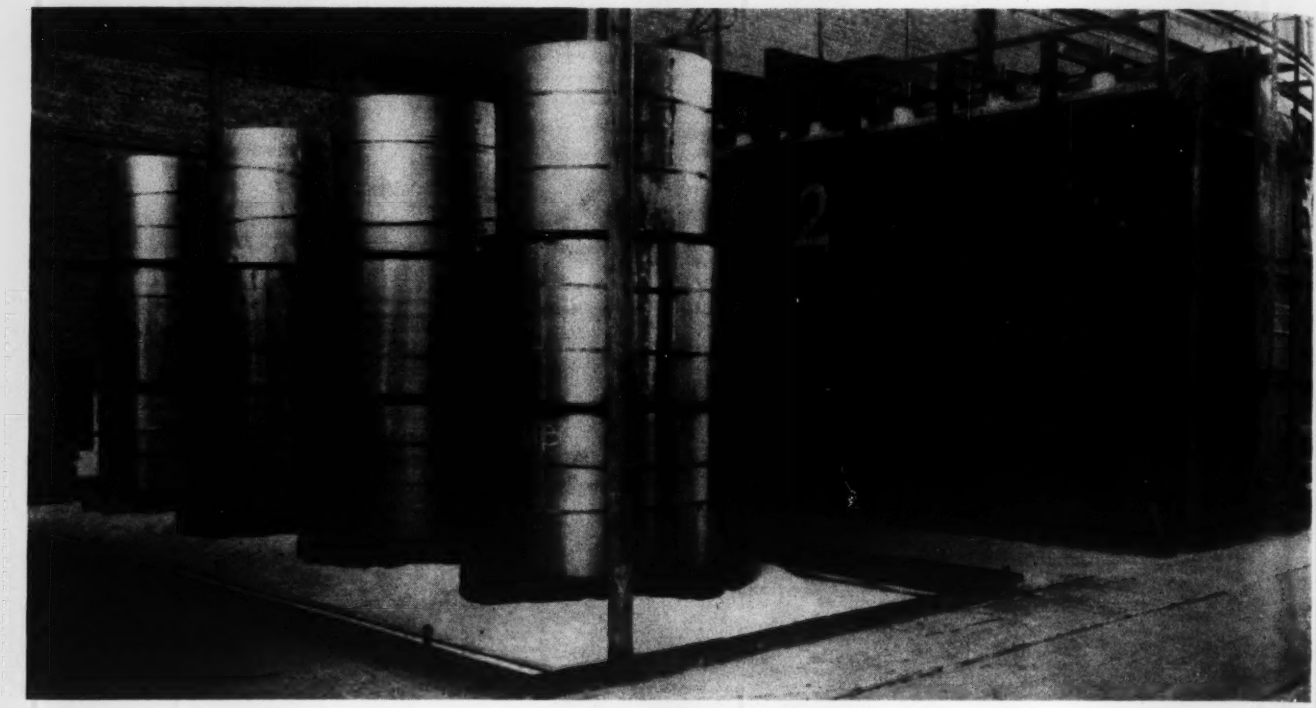

Radiant type furnace for annealing coils of strip

mum width of 59 inches. Coils can be accommodated up to 15 tons for 39-inch widths, and up to 18 tons for 59-inch widths. The installation includes a continuous pickling setup, a 3-stand tandem mill and two skin-pass mills, an annealing department, a shop for shearing, straightening, oiling and marking, and a galvanizing plant.

How Pickling Line Operates—A conveyor brings the coils to the starting point of the continuous pickling line where they are unwound and straightened and the coil ends sheared. Four acid baths, each 72 feet long, serve the plant. Just ahead of the acid baths is a station for welding together the ends of successive coils. Following the acid baths is a double bath for washing off the acid, one with cold and the other with hot water. This is followed by a hot air drying station, then by a shearing station. The strip is then oiled and coiled and the coils are rocked onto a conveyor for despatch. The line is timed to give a maximum speed of 420 fpm, permitting a regular flow of 328 fpm or 3¾ mph.

The cold reduction mill comprises three stands, and is provided with uncoiling equipment in front and coiling equipment at the rear. The 21-inch working rolls are of special steel forged and heat treated, or of special hardened cast iron. The 53-inch backup rolls weigh 25 tons each. Each stand is driven by a variable-speed motor of 2500 hp.

Speed of Mill—Strip comes out of the last pass at a maximum rate of speed of approximately 1200 fpm, or 13¾ miles per hour. The cooling equipment for the rolls is provided with a reserve tank of 15,970 gallons of soluble oil, and there is a reserve tank of 3963 gallons for the cooling of the housings.

Annealing the coils after reduction is done in radiant type furnaces. The plant is provided with 32 bases, each of which can take up a charge of 180 tons of coils, consisting of four piles of two or three coils. Each pile is protected by a cover, the inside of which an active circulation of dry and neutral gas is insured by use of a 15-hp blower. By this process the annealing takes place without any oxidation. Removable covers are heated by radiant heat, the calorific capacity of which is 4 million calories per hour. Each cover is lifted and lowered by a 60-ton traveling crane that serves three bases. Reheating temperature is 700° C and the uniform distribution of heat through coils is automatically controlled.

Similar in Construction—Two skin-pass mills are provided, one 66 inches wide for coils or sheared sheets and the other 48 inches for coils only. Both mills are similar in construction to the cold reduction mill stands. The 66-inch mill is driven by a variable-speed motor of 800 hp rating. The maximum speed of rolling is 803 fpm or 9.375 miles per hour. The 48-inch mill operates at 2000 fpm or 23 miles per hour. It is driven by a variable-speed motor of 1500 hp.

Frozen Mercury Casting Story

Glimpse of the frozen mercury process of casting is given in a booklet issued by Alloy Precision Castings Co., Cleveland. Through the use of booking dies the company is making one piece shapes previously considered difficult or impractical. How the process, called Mercast because it uses frozen mercury in the making of the ceramic die, is carried out, the facilities used and the type of parts that can be made are covered in the publication.

It is reported that there are no limitations as to metals which may be used with the process; stainless steels, high heat resistant nonmachinable metals, copper and aluminum are being cast. A description of the various testing procedures and equipment used in the testing is included in the illustrated booklet, available from the company, E. 45th and Hamilton Ave., Cleveland 14, O.

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P Pittsburgh Wire

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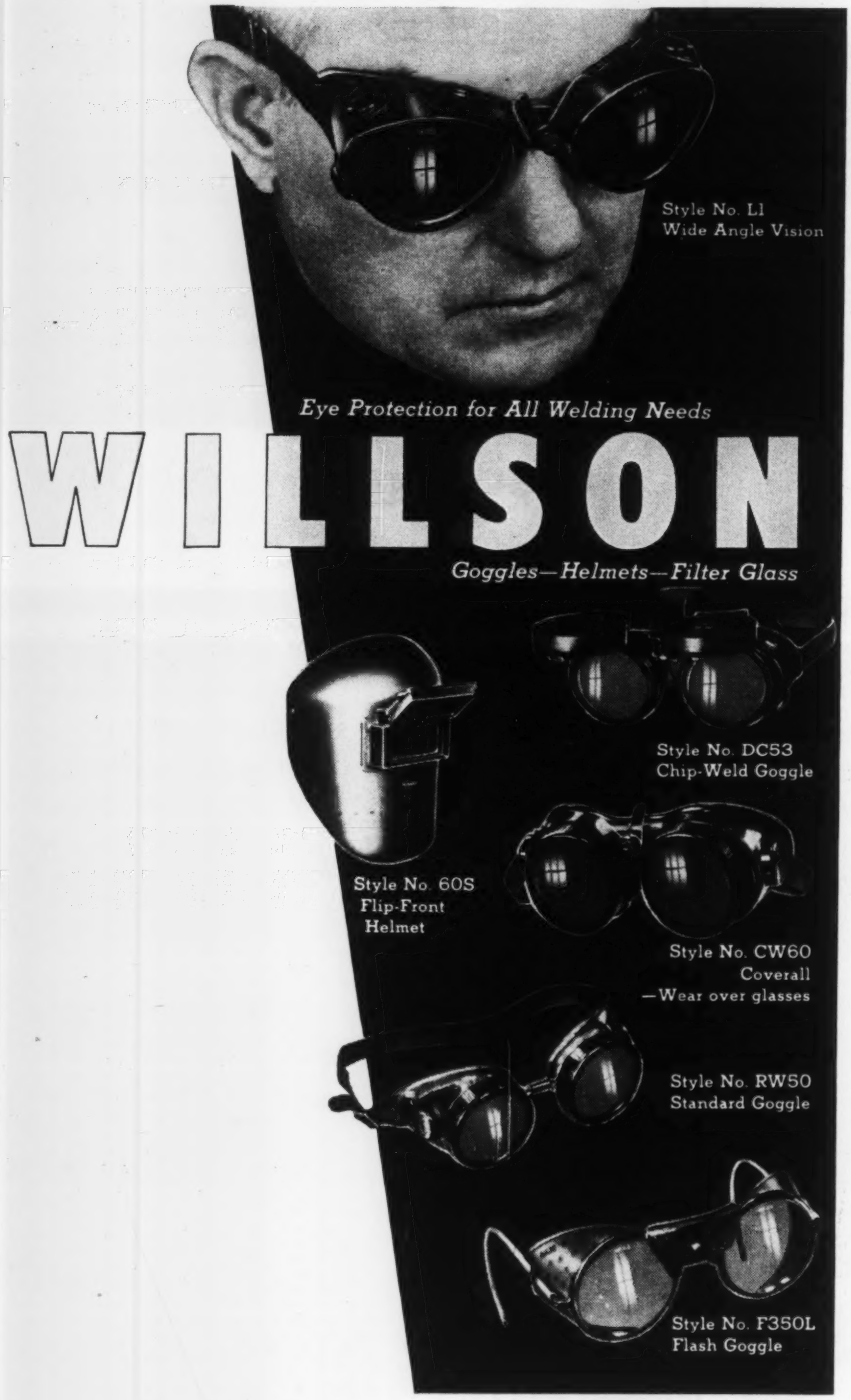

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Instrument Transformer Manual

Practicing engineers and students and others engaged in the fields of power generation, transmission and application should see many of their metering and relaying problems solved by an illustrated 76-page manual covering theory of operation and the application of instrument transformers.

Available from Apparatus Department of General Electric Co., Schenectady, N. Y., the manual covers the basic fundamentals of instrument transformers, such as accuracy standards, insulation and polarity. Also included is information on potential and current transformers, including operating principles, types and ratings, applications, circuits, fusing, etc. Priced at $1.00, the manual, designated as GET-97A, has a chart for selecting the proper transformers for a specific application and a bibliography covering various phases of instrument transformer operation, design, application and performance.

Dust Controlled on the Floor

Here's a new wrinkle in dust control: By applying an antiseptic solution to the floor of your plant, you can: Reduce dust damage to precision machinery and instruments, and to materials and products during manufacturing operations and storage; cut absenteeism, because it provides a healthier atmosphere; restore floors to original beauty; and substantially reduce your maintenance cost while increasing sanitary conditions.

Developed by West Disinfecting Co., Long Island City, N. Y., after more than a year of actual field testing, the solution, known as Westone, keeps the air free from dust. It is formulated for the preservation of floor surfaces and elimination of dust. It not only removes dust from floors but leaves an antiseptic film said to inhibit the growth and multiplication of bacteria. Its surface-sealing film holds down subsequent dust for quick and easy removal.

Cuts Concrete with Ease

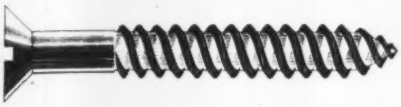
Concrete or asphalt flooring may be cut for expansion joints or patchwork for repairs of plumbing, conduit, etc., with a portable masonry saw.

made by Clipper Mfg. Co. of Kansas City, Mo. The saw is capable of straight smooth cuts with finished edges. Every form of masonry material can be cut, it is reported, as metal bonded diamond blades suitable for limestone, flint or granite aggregates are available.

Screw Has More Holding Power

Two parallel threads that start at opposite sides of the shank and terminate in a single centered point is the reason the Twin-Fast screw, introduced by Blake & Johnson Co., Waterville, Conn., may be inserted at a doubled driving speed. Driving torque is said to be nominal, as the twin thread construction provides the standard number of threads per inch.

For certain types of assemblies the screw is self-tapping—it cuts its own full threads. Screw itself is cylindrical in shape (see drawing), a feature said to give it greater strength. As the thread area is increased, more extensive contact, tighter seating and greater holding power are reported. Because of this factor it has been found that shorter screws, and even fewer screws, often can be used.



The screws, now being made by several licensees, are offered in all standard sizes in steel and brass and with round, flat, oval and Phillips heads. Producing the Twin-Fast screws under license, in addition to Blake & Johnson Co., are American Screw Co., Willimantic, Conn.; Continental Screw Co., New Bedford, Mass.; National Screw & Mfg. Co., Cleveland; Southington Hardware Mfg. Co., Southington, Conn.; Stowell Ltd., Montreal, Que.; and Guest, Keen Metalfold Ltd., Birmingham, England.

Meets Core Industry Needs

Defining terms commonly associated with electronic cores made from iron powder and specifying preferred dimensions of standard insert iron cores and threaded iron cores is standard 11-50T, released by Metal Powder Association, New York. Specifications include core diameters, lengths, screw inserts, insert size of tuning and insert cores, screw driver slots for inserts, spaded inserts and screw driver slots molded in cores.

Thread specifications for standard threaded iron cores are given, along with outside diameters and maxi-

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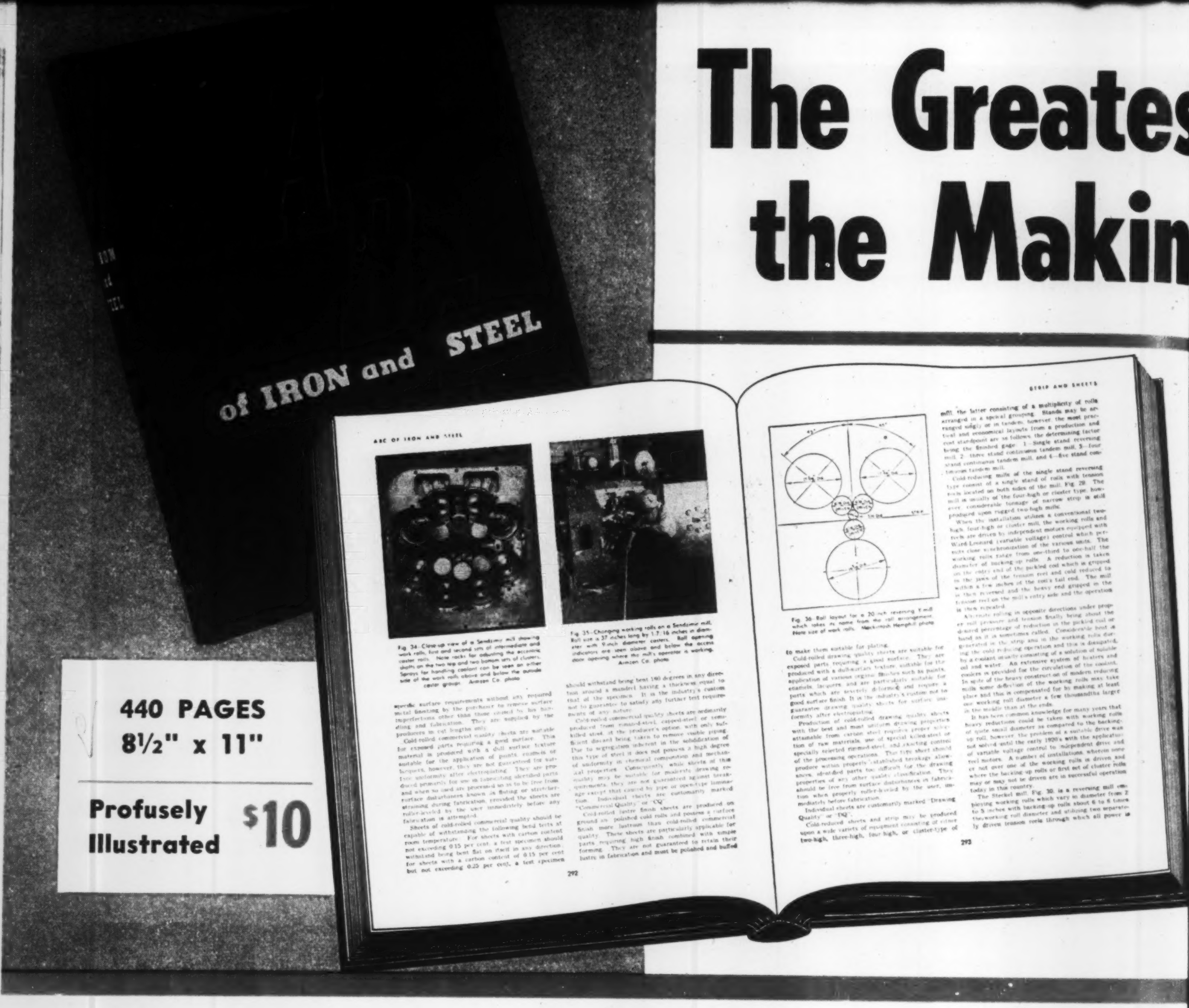

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THAT BOOK YOU SEE PICTURED at the left, "The ABC of Iron and Steel," represents years and years of constant work and study in every branch of iron and steel practice—every statement in it is the result of actual, first-hand experience. The ABC was conceived and published in answer to the demand for a book that should cover the entire iron and steel industry.

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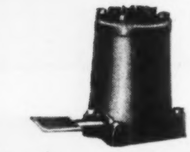
● Quick-As-Wink Solenoid Valves are unsurpassed for positive, trouble-free, dependable service . . . they give users millions of cycles of fast, high speed — and safe — operation. All parts are rugged yet weigh only a few ounces, simplifying electrical circuits, and minimizing wear and maintenance. Careful exhaust porting assures high air economy. ⅜″ to 2″ sizes. 2, 3 or 4-way actions. Bucking cylinder or double solenoid return. Send for the data sheets. Get full details about Quick-As-Wink, America's outstanding valve line, *today.*

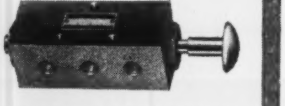
Individual **DATA SHEETS** for Each Valve
— give complete details. Write today!

Hand Operated Air Valves—wide variety of uses. 2-way, 3-way, 4-way neutral position and compound exhaust.

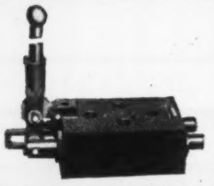


Foot Operated Air Valves—workman has both hands free, speeding production. 2-way, 3-way and 4-way actions.

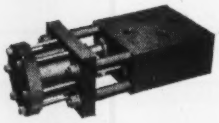
Single Plunger Valves—for air or low pressure hydraulic service. Lever, pilot, cam, diaphragm or solenoid operated. 2-way, 3-way, 4-way actions.



Series "O" and "OE" Valves—for air or hydraulic service up to 125 PSI. Push-pull, cam, pilot, diaphragm and solenoid operated. ⅛″ and ¼″ pipe connections. 2-way, 3-way, 4-way and 5-way actions.



Hydraulic Valves—Up to 5000 PSI. Conservatively rated. ½″, ¾″, 1″ and 1½″ sizes. 2-way, 3-way, 4-way actions.



Hydraulic Valves—Up to 5000 PSI. Pilot cylinder operated. ½″, ¾″, 1″, 1½″ 2″, 2½″ 3″ and 4″ sizes 2-way, 3-way, 4-way actions.

Quick-As-Wink
Control Valves

THE HIGHER THE PRESSURE THE TIGHTER THE SEAL

Manufactured by **C. B. HUNT & SON, Inc.**
1926 East Pershing Street, Salem, Ohio

mum length, diameter tolerance versus permeability, screw driver slots and standard hexagonal holes. Entitled "Preferred Iron Core Dimensional Specifications", the standard was developed after investigation by members of the Electronic Core Subcommittee of the MPA standards committee. Copies are available from the association, 420 Lexington Ave., New York 17, for 25 cents.

Evaluation Tests for Steels

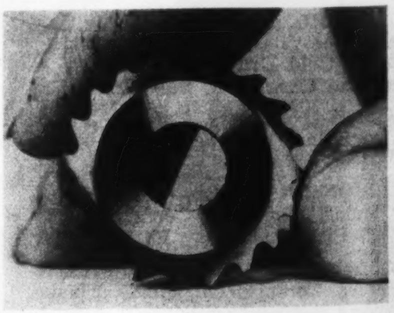
Critical appraisal of some of the testing methods that are in regular use for evaluating certain corrosion-resistant characteristics of stainless steel alloys are presented in a symposium published by American Society for Testing Materials. Special attention is given two features: The significance of results of laboratory evaluation tests with relation to practical experience under diverse service conditions; and the effects on behavior of the alloys in test, and in use, of lowering carbon contents to extremely low limits.

Copies of the 230-page book, special technical publication No. 93, published with heavy paper cover, are available from ASTM located at 1916 Race St., Philadelphia 3, Pa., for $2.50.

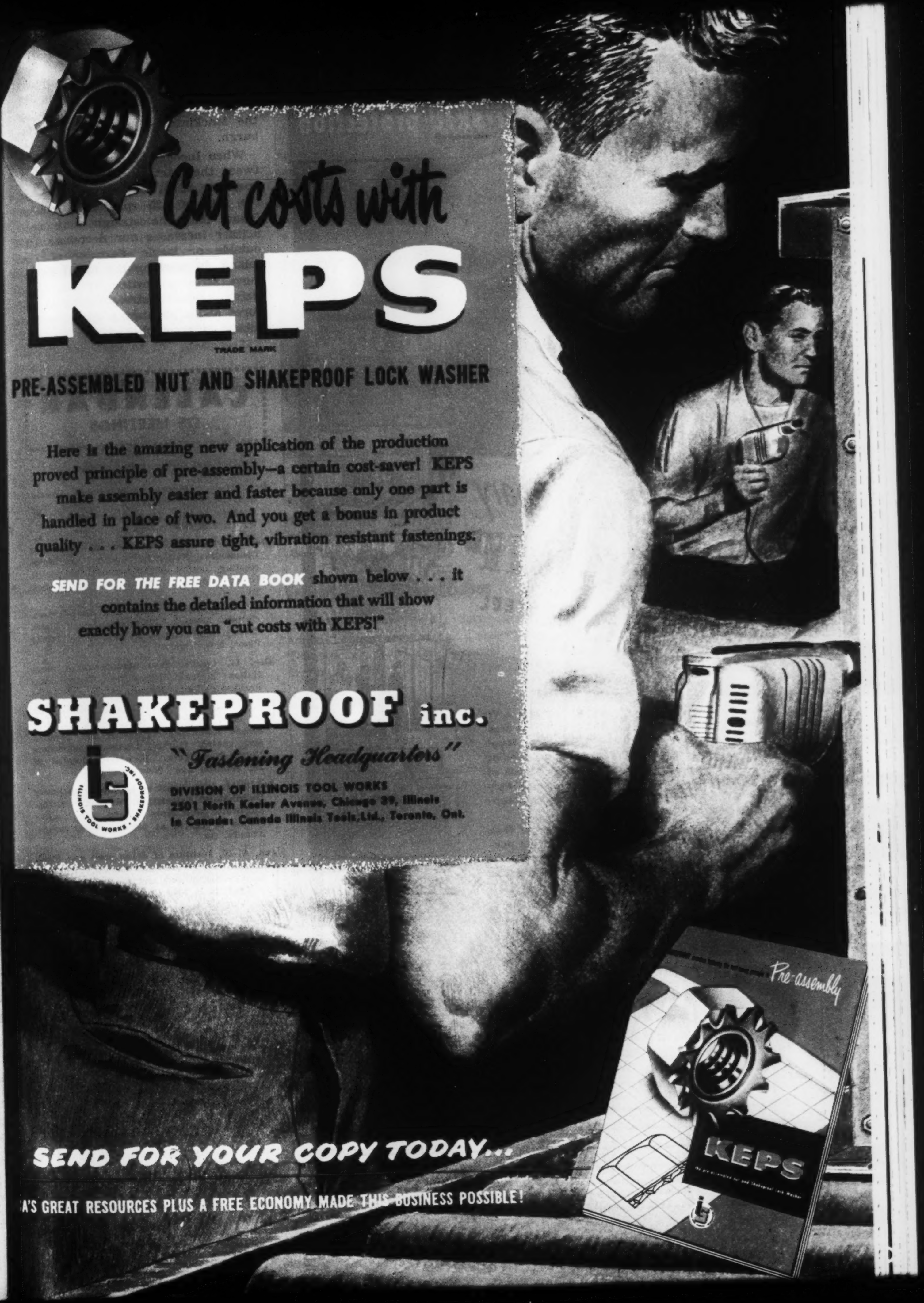
Tubing Goes Straight

Between 30,000 and 55,000 feet of tubing ranging in size from 9/32 to ½-inch is being straightened in an 8-hour shift by a rotary straightener recently installed at Greenville Tubes Inc., Greenville, Pa. Positioned on the production line between final sizing

In the Groove



With milling a 1/32-inch slot 1/16-inch deep in the end of stainless steel pins its problem, the Locomotive and Car Equipment Divisions of General Electric Co. solved it by resorting to a small and solid grade 883 Carboloy saw of the type shown. Number of saws used in machining the parts is reported to have been reduced by 83 per cent and the number of saw changes by 93 per cent.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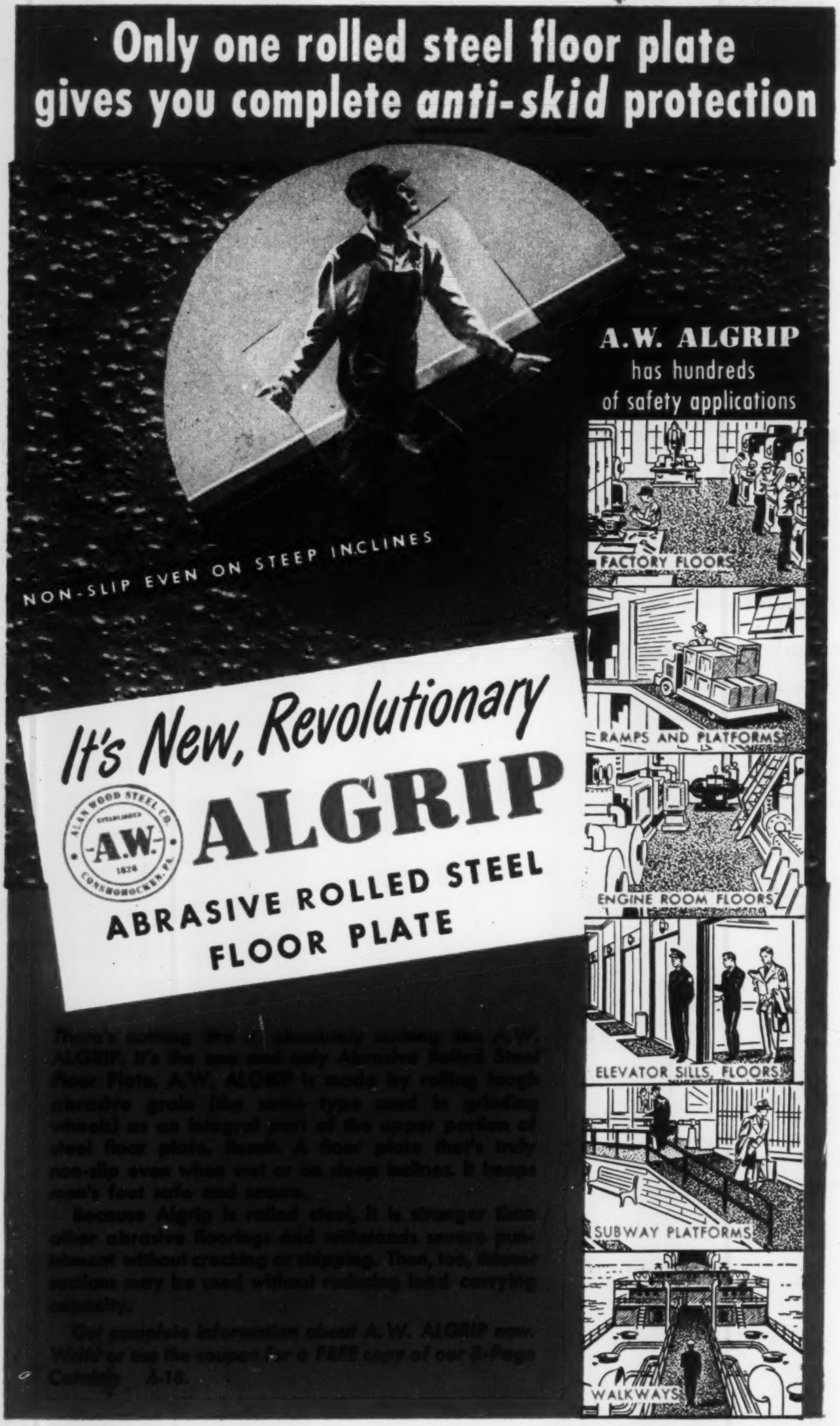

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and the last cutoff operation, copper, stainless steel and Inconel tubing are processed by the machine, made by the Mackintosh-Hemphill Co., Pittsburgh.

When Inconel tubing is passed between the machine's crossed rolls, it operates at ¾ rated speed, or at the rate of 125 rpm. It has been found that the straightening unit neither increases nor decreases the outside or inside diameter of the tubing. In working the metal to remove stresses created by the final sizing, precision straightening is secured and a burnishing effect on the tubing is accomplished.

CALENDAR
OF MEETINGS

† *Denotes first listing in this column.*

Dec. 11-12, American Management Association: National Production Conference, Hotel Drake, Chicago. Association address is 330 W. 42nd St., New York 18.

Dec. 12, National Association of Engineering Companies: National industry mobilization meeting, Detroit-Leland Hotel, Detroit, Mich. NAEC address is 1601 Dime Bldg., Detroit 26.

Dec. 13-14, Power Crane and Shovel Association: Meeting, Edgewater Beach Hotel, Chicago. Association address is 74 Trinity Place, New York 6.

Dec. 14, Cutting Tool Manufacturers Association: Meeting, Recess Club, Detroit. 416 Penobscot Bldg., Detroit 26, is association address.

Dec. 14-15, Society of the Plastics Industry: Second conference of plastics film, sheeting and coated fabrics division, Commodore Hotel, New York. Society is located at 295 Madison Ave., New York 17.

Jan 10-12, 1951, Southern Supply & Machinery Distributors' Association: Mid-year meeting, Edgewater Gulf Hotel, Biloxi, Miss. Association is located at 208 Peachtree arcade, Atlanta, Ga.

Jan. 14-16, Institute of Scrap Iron and Steel: Annual convention and exhibit of equipment manufacturers and suppliers. Location of institute is 1346 Connecticut Ave. N. W., Washington 6, D. C.

Jan. 15-16, Industrial Furnace Manufacturers Association: Mid-year meeting, Edgewater Beach Hotel, Chicago. Address of association is 420 Lexington Ave., New York 17.

†Jan. 15-18, Plant Maintenance Show and Conference: Cleveland Public Auditorium. Clapp & Poliak Inc., 341 Madison Ave., New York 17, is managing the event.

†Jan. 22-26, American Institute of Electrical Engineers: Winter general meeting, Hotel Statler, New York. Address of institute is 33 W. 39th St., New York 18.

†Jan. 22-26, American Society of Heating and Ventilating Engineers: 57th annual meeting and exposition, Commercial Museum, Philadelphia. Society address: 51 Madison Ave., New York 10. Exposition managed by International Exposition Co., 480 Lexington Ave., New York.

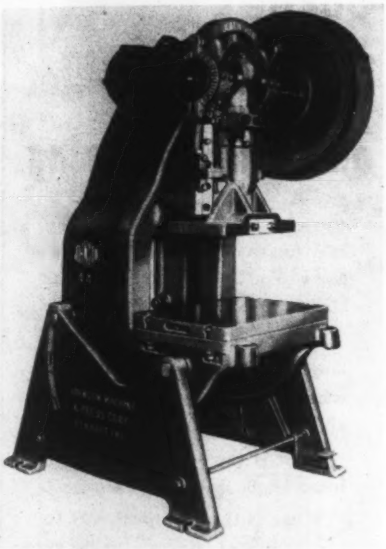
†Jan. 28-Feb. 1, Associated Equipment Distributors: 32nd annual meeting, Stevens Hotel, Chicago. AED is located at 360 N. Michigan Ave., Chicago 1

New Products and Equipment

Exerts 43-Ton Pressure

Offered in both flywheel and gear types is a punch press adaptable to intermediate tasks, built by Johnson Machine & Press Corp., Elkhart, Ind. Capable of exerting 43 tons pressure at bottom of stroke, press is built for die casting, trimming, and light sheet jobs. It has oversized side arms, longer strokes, greater bed area and larger ram face. Opening through the back of the press is 21 inches.

The model 44 press (geared type) occupies a floor space of 52 x 67 inches and is 95 inches high. Power is by a 3 hp motor operating at 1800 rpm. Gear ratio is 5 to 1 and back shaft has a speed of 230 strokes per minute. Ram is capable of 46 strokes per minute. Die space, bed to ram face, stroke down adjustment up, is 11½ inches. Additional shut height up to 20½ inches is available but optional.

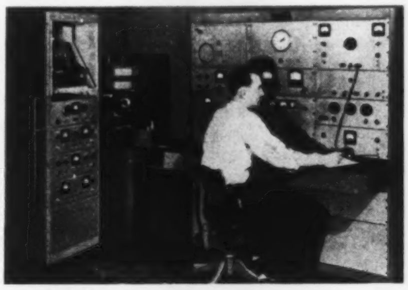


Check No. 1 on Reply Card for more Details

Analytical Mass Spectrometer

Ten times the sensitivity and a mass range up to 400 is offered by a mass spectrometer developed by Consolidated Engineering Corp., 620 N. Lake Ave., Pasadena 4, Calif. The model 21-103 unit has an ion source and a stainless steel analyzer that replaces the previous ionization chambers, analyzer tube and glass envelope.

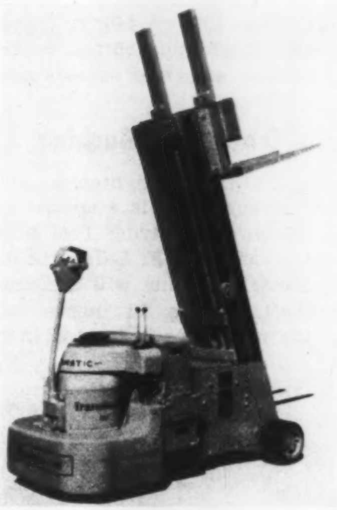
Resolving power of the unit can be adjusted during operation, meaning that for normal operation in the lower mass ranges the resolving power can be set to provide the optimum in scanning speed, sensitivity and peak shape, yet can be adjusted by means of a dial setting for high mass work. The Isatron ion source is designed to eliminate alignment shifting to minimize possibilities for electrical leakage and to reduce or eliminate other causes of instability. Direct measurements of sample pressures are made with an electronic micromanometer.



Check No. 2 on Reply Card for more Details

Truck Lifts 11 Inches Higher

Eleven inches of lift have been added to the tilting telescopic Transtacker, one of six model 101 driver-led electric stackers of the suspended fork type built by Automatic Transportation Co., 149 W. 87th St., Chicago, Ill. The tilting and telescopic unit, model SCLT, is accompanied by a nontelescopic unit, the SCL. The SCX is designed for use where neither tilt nor telescopic lift are required. These are rated for 2000-pound, 48-inch long loads. Three similar models for 48-inch 2500-pound loads are available.

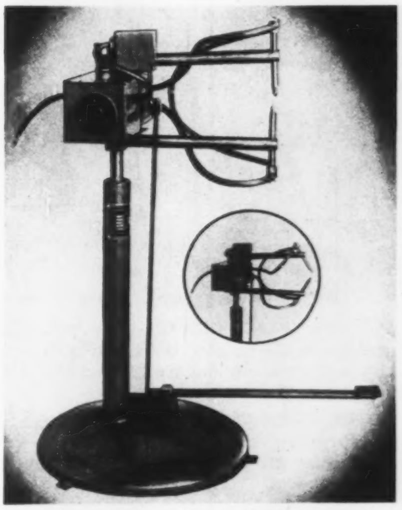


Increased lift allows the SCLT Transtacker to tier to 131 inches. Truck is 5½ inches shorter and 650 pounds lighter than the previous model. Protection of operating parts of the power unit is assured by a cast drive housing. Unit operates in both speeds, either forward or reverse, with the handle upright.

Check No. 3 on Reply Card for more Details

Rocker Arm Type Welder

Built with reversible arms for vertical and slant electrode holder mounting is a welder of the rocker arm type introduced by Universal Welder Corp., 735 Carnegie Ave., Cleveland 15, O. Unit pictured is rated at 5 kva, 220 v 60 cycle 50 per cent duty cycle in accord with Resistance Welder Manufacturers Association practices. Unit can make welds in sheets from two No. 28 gage to two No. 20 gage steel.



Throat depth may be varied from 3 to 15 inches by adjusting the arm length. Arm spacing also may be adjusted and arms can be swivelled to get into hard to get at places. Both air cooled and water cooled point holders are available as are electronic timers.

Check No. 4 on Reply Card for more Details

Vibration Test Equipment

Acceleration of 50g is attainable with mass loads of ¾-pound or less using the model 44 shaker built by Calidyne Co., 751 Main St., Winchester, Mass. Testing to U. S. Air Forces specifications of 20g can be met with inertia loads up to 14 pounds. Features include 450 pounds vector force output at 40° C arma-

5 important reasons
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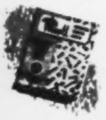
- All products are manufactured under rigid quality control standards.
- Constant product inspection from laboratory metal analysis, through production and final finish is your assurance of precision made, trouble-free screws, bolts and nuts.



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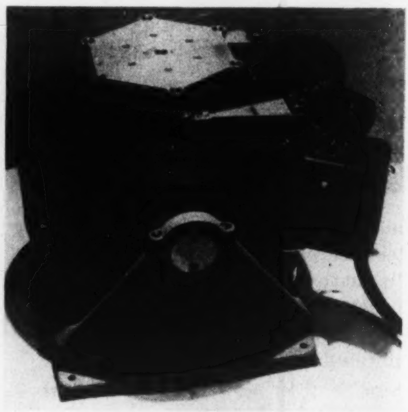
ture temperature rise, 100° C allowable temperature rise, Class B glass insulation, optional signal generator attached directly to table, 1-inch total armature stroke and trunnion mounting for vertical or horizontal operation.

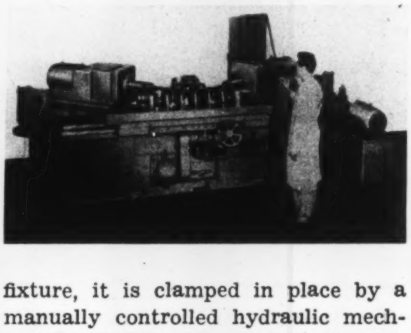
Model 45 power supply made by the company is capable of supplying the shaker at its rated output. Control console houses all controls, indicators, condensers for power factor correction, circuit overload and short circuit protection and switchgear exclusive of the magnetic motor starter. It can be obtained to control two shakers. Frequency range is from 2 to 500 cycles per second. Unit is protected against damage from short-period overload operation or accidental short circuit. Operation is from 220 or 440 v, 3-phase line with single pushbutton control.



Check No. 5 on Reply Card for more Details

Special Crankshaft Machine

Built for drilling lightening holes in large crankshafts is a special machine designed by Snyder Tool & Engineering Co., 3400 E. Lafayette, Detroit, Mich. Machine will accommodate shafts up to 73 inches long. Once the workpiece is located in the fixture, it is clamped in place by a manually controlled hydraulic mechanism. It then is indexed through six stations by a power operated but manually controlled index unit. Final adjustment is by means of a handwheel which brings the fixture into



WHAT'S
THE BEST WAY TO
STRIP PAINT FROM
METAL PARTS TOO
LARGE TO
BE SOAKED
IN TANKS?

See Page 3

how to
STRIP
PAINT
with Oakite
Materials & Methods

Oakite's
New FREE Booklet
on Paint Stripping

answers many questions that will lead you to better stripping procedures. You'll want to read more about:

What's the best way to strip large areas of structural metal where a steam supply is available? *See page 5.*

What is the best method when steam is not available? *See page 7.*

What is the cheapest way to strip metal parts in large volume? *See page 9.*

What are the best ways to prepare stripped surfaces for repainting? *See page 11.*

What strippers are best for removing oil-base paints? . . . Synthetic enamels, alkali-resistant plastics or resin-based paints? . . . Japans, wrinkle finishes, nitrocellulose lacquers, alkyds, phenolics and ureas? *See page 12.*

FREE For a copy of "How to STRIP PAINT" write to Oakite Products, Inc., 34E Thames St., New York 6, N. Y.

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SEND for this catalog which contains information on how to select, use and care for sling chains. It is DH-80.

● The right sling chain for the job is the safe one. The wrong sling chain might be a hazard—to men, materials and equipment.

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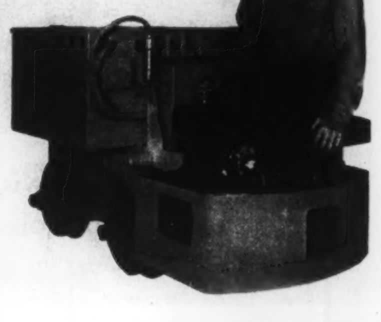
engagement with locating pins.

Machine can be set up for any desired number of stations for handling other size crankshafts. Drills up to 2 inches can be used, a change gear transmission being provided for speed adjustments. Two standard Snyder guide-bar units are used, driven by two 10 hp motors. Table is driven by a ¾-hp motor. Stroke is 15 inches on both guide-bar units. Machine is equipped with safety interlock on index mechanism and fixture.

Check No. 6 on Reply Card for more Details

Battery-Powered Locomotive

Designed for use in metal mines where clearances are restricted is a 1½-ton battery-powered trammer for use in mine haulage work, a development of General Electric Co., Schenectady 5, New York. It is offered in any track gage between 18 and 24 inches. Unit measures 71½ inches long over bumpers and 39-9/16 inches wide. With standard batteries the 5000-pound trammer is 38⅛ inches high or with a high type battery, 44⅛ inches high.



Individual drive from the motor to each of two axles provides maximum tractive effort. Rated drawbar pull is 400 pounds, but a maximum drawbar pull on level tangent track of 750 pounds is available. Maximum speed is 7 mph. Master controller with one handle governs both power application and braking operations. Any standard make of battery may be used. A folding cab permits loading into mine hoist cages.

Check No. 7 on Reply Card for more Details

Coil Impregnating Equipment

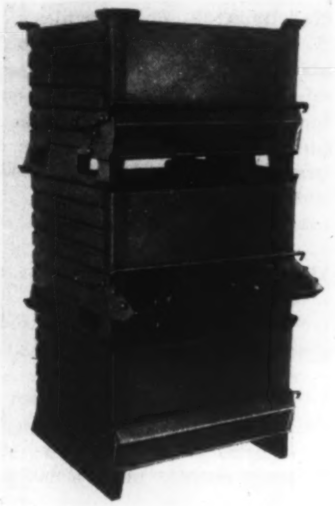
Equipment for the impregnation of electric coils, carbon parts and other materials is being built by Struthers Wells Corp., Warren, Pa. It provides for a quick opening vacuum and pressure closure, allowing the tank cover to be opened or closed within seconds without manual effort. Door is opened and removed by push-button control.

Equipment is available in a range of sizes for vacuum and pressure operation and for use by heating with steam, electricity or Dowtherm, or for nonheated operations. The impregnating equipment is offered as complete units or principal parts only will be furnished. Complete units include structural steel, piping, insulating casings for tanks and accessories. Complete Dowtherm heating systems can be supplied for higher temperatures or for operation where steam is not available.

Check No. 8 on Reply Card for more Details

Frameless Hopper Box

Use of a hopper box designed by Powell Pressed Steel Co., Hubbard, O., eliminates need for auxiliary stands or frame support. Box is made in sizes, gages and types to suit the job application, whether it be in the manufacture of small parts, on assembly lines, etc.



Hopper door drops work at convenient level for assembler or machine operator. The box easily tiers for storage. It is available in gravity feed or slot bottom styles with two or four-way lift truck entry with door styles to fit job applications.

Check No. 9 on Reply Card for more Details

Portable Arc Welder

For welding light as well as heavy gage metals is the model 125A portable electric arc welder made by Trindl Products Ltd., 17 E. 23rd St., Chicago 16, Ill. Featured are sloping control panel, simplified terminal

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Approved Protection for oil filled electrical equipment

Fire damage to transformers can seriously curtail plant operations and result in high cost equipment losses and out-of-service time. That's why you'll be using good judgment when you make sure that your oil filled power generating equipment is safe from fire 24 hours a day, every day of the year.

You can get this protection by specifying Automatic FIRE-FOG, for when fire breaks out, FIRE-FOG goes into action instantly . . . automatically . . . stops the fire quickly and surely.

Specifically designed for your particular risk, Automatic FIRE-FOG is electrically safe and carries the approval of all leading insurance authorities.

Better get in touch with an Automatic Sprinkler fire protection engineer for details on FIRE-FOG and other types of fire extinguishing systems. Name your hazard—we'll protect it!

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control, ease of striking arc, spun glass insulated transformer and fully insulated terminals. It has 16 heat stages ranging from 20 to 125 amp and handles 1/16 to 5/32-inch welding rod.

Iron, steel, brass, bronze and other metals may be welded. Operating features include stable arc, no arc blow, no moving parts and compact design. Unit is furnished with headshield, electrode holder, ground clamp, cables, assorted welding rods and operating instructions.

Check No. 10 on Reply Card for more Details

• • •

MEASURES HOLES: Designed for measuring holes, slots, grooves and recesses ranging from 0.125 to 0.500-inch which are too small or shallow for conventional telescoping gages, are the new No. 830 gages made by L. S. Starrett Co., Athol, Mass. They are adjustable to size by a knurled knob at the end of the gage which provides smooth and sensitive adjustment.

Check No. 11 on Reply Card for more Details

REMOTE CONTROL: New electric remote control for Speed-Trol electric power drives is introduced by Sterling Electric Motors Inc., Los Angeles 22, Calif. This packaged unit includes a mounting bracket, reversing motor, chain and sprockets, friction clutch, chain guard and remote fast-slow station. It may be mounted on any size Speed-Trol of current design.

Check No. 12 on Reply Card for more Details

WASHES SAND: Gordon-Campbell sand washer, available from Claud S. Gordon Co., Chicago 16, Ill., uses a centrifugal unit to remove clay from sand grains. A single blade impeller driven at high speed by an electric motor throws sand grains against baffles suspended in the beaker containing sand and water. Unit is made in two models.

Check No. 13 on Reply Card for more Details

IMPROVED VALVE: No. 197-135 type E high pressure reducing valve, made by Atlas Valve Co., Newark 5, N. J., handles working pressures as high as 6000 psi. It is provided with Stellite-faced main valve and seat ring.

Check No. 14 on Reply Card for more Details

GREASE IN CARTRIDGE FORM: Grease No. 32 for open gear service, offered by Keystone Lubricating Co., Philadelphia 32, Pa., is extremely tenacious and highly adsorptive. It is supplied in cartridge form to fit a specially nozzled gun applicator which ribbons the grease and frequently allows application while gears are moving. Grease is water repellent, has a melting point about 400° F and retains plasticity with temperatures below freezing.

Check No. 15 on Reply Card for more Details

MEASURES RADIOACTIVITY: Universal roentgen meter, produced by Westinghouse Electric Corp., Pittsburgh 30, Pa., is the measuring part of radiation detection devices which reveals radiation, expressed in milliroentgens, that the device detects. Meter is equipped with multiple scales, either four, five or six, which make possible fine readings in all ranges of radiation.

Check No. 16 on Reply Card for more Details

ELECTRONIC SWITCHES: Celab electronic switches, developed by Clark Electronic Laboratories, Palm Springs, Calif., can perform any automatic operation or can be remote controlled by pushbutton without magnetic or mechanical parts. They will operate indoors or outdoors under any weather conditions.

Check No. 17 on Reply Card for more Details

PLASTIC PIPE: Carlon Products Corp., Cleveland 5, O., introduces a new plastic pipe that is furnished in threaded sections together with molded plastic fittings which facilitate installation of standard or intricate systems for handling fluids or gases. Designated TL, it is furnished in 20-foot lengths and incorporates standard international pipe threads.

Check No. 18 on Reply Card for more Details

DETECTS SMOKE: Safe-Eye smoke alarm system, developed by Valley Forge Safe-Eye Alarm Service, Lansdale, Pa., involves use of a photoelectric cell and very sensitive amplifier, used in conjunction with a light beam projector that covers extreme areas. Smoke crossing the light beam sets off the alarm. The system will cover distances up to 200 feet in length by 30 feet in width.

Check No. 19 on Reply Card for more Details

SWITCHES CIRCUIT AUTOMATICALLY: Type J3 manual preset time switch, made by Automatic Temperature Control Co. Inc., Philadelphia 44, Pa., automatically switches an electrical circuit either on or off according to a time interval set on a large clearly calibrated dial. Standard dial ranges available are 0-15 seconds to 0-24 hours.

Check No. 20 on Reply Card for more Details

SUPPORTS TWO LIGHTS: A new yoke assembly, available from Thompson Electric Co., Cleveland 14, O., is designed to suspend two pendant-type lighting fixtures from the company's disconnecting and lowering hanger. The yoke permits operation of lights of different types, sizes, and/or weights from a common outlet. It is recommended for mercury-incandescent combinations.

Check No. 21 on Reply Card for more Details

PROVIDE HYDRAULIC SEALS: Frederick S. Bacon Laboratories, Watertown 72, Mass., introduces precision O-Rings that provide hydraulic seals resistant to petroleum oil and most hydrocarbons. They are molded from a mixture of silicone rubbers that are resistant to deformation under compression and which retain flexibility even at temperatures of minus 65° F and lower.

Check No. 22 on Reply Card for more Details

SAFETY IN DRAINING: Safety tilter with pouring spout, made by General Scientific Equipment Co., Philadelphia 32, Pa., provides a safe and convenient method of draining acids and other liquids from stainless steel barrels. Locking device permits tilter to be positively held at any angle for pouring. Safety air vent pouring spout insures even flow of liquid.

Check No. 23 on Reply Card for more Details

VARIABLE SPEED DRIVE: Specon No. OOED, a new variable speed drive rated at ½-hp in nonreversing (reversible if desired) and 1/3-hp in reversing model, is offered by Speed Control Corp., Wickliffe, O. Unit consists of a standard alternating current squirrel cage motor, two standard direct current motors and a differential gear box.

Check No. 24 on Reply Card for more Details

DISK VALVES: Butterfly disk type valves for all high vacuum applications are announced by F. J. Stokes Machine Co., Philadlephia, Pa. Standard sizes are 6, 8, 10 and 12 inches. Opening and closing are effected through a worm gear. Valve is designed for pressure differential in both directions.

Check No. 25 on Reply Card for more Details

FOR MORE INFORMATION

on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

SWEEPING upward revisions in iron and steel prices continue. Virtually all products are affected. Changes are being made in some extras as well as base prices, and it appears it will be another week or so before all producing companies have completed action on their schedules. Adjustments in steel are being accompanied by advances on pig iron, scrap and other raw materials. Ferroalloys are coming in for revision. Meanwhile, the trade anticipates early application of new and stiffer government regulations affecting prices, wages and production in general. Some observers expect a swing to mandatory supply ratings similar to the Controlled Materials Plan of the last war within the next 30 to 60 days.

PRICES— As a general thing, the industry is following the lead of U. S. Steel subsidiaries in advancing prices. The Corporation units raised quotations about $5.50 per ton on the average over the product mix. Other producers are following along although there are deviations above and below U. S. Steel schedules as has been the case in the past. Warehouse operators are increasing quotations to offset higher steel and wage costs. Fabricated steel prices are advancing sharply, reflecting not only the increases on finished steel but wage advances at fabricating shops. Indications are higher steel and wage costs will be quickly passed on to consumers all along the line on manufactured goods with an early price-wage freeze threatened.

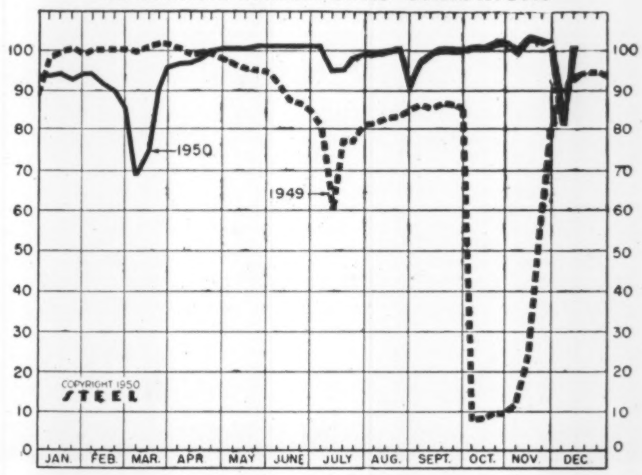
COMPOSITES— STEEL's weighted index on finished steel prices advanced last week to 167.76 from 157.76 the preceding week and 152.52 for the like week a year ago. The arithmetical price average rose to $110.53 from $95.09 the week preceding, and compares with $91.64 a year ago. Last week's figures are subject to revision since some companies are still issuing price announcements retroactive to Dec. 1. Pig iron composites are up $3 per ton, with No. 2 foundry, $52.54 against $49.54 the preceding week, basic, $52.04 against $49.04, and malleable, $53.27 compared with $50.27. A year ago No. 2 foundry was $46.10, basic, $45.60 and malleable $47.27. Scrap prices also moved higher, pressure under the market forcing a revision in the so-called price formula applying in this market for some months past. Steelmaking scrap composite rose to $45.50 from $41 the preceding week, and $29.17 the like week a year ago.

SUPPLY— Procurement difficulties are mounting. Metalworking shops producing goods for the civilian market are increasingly out of luck in the matter of supplies. All signs point to worsening supply conditions with acute scarcities threatened in first half of 1951 unless curbs on civilian goods ease demand pressure. Producers are booked full for January and are not accepting orders beyond that month except on DO and other emergency ratings. As a result civilian goods industries are turning in desperation to the premium markets for relief. Conversion mills, however, are booked solidly for months ahead and are turning away business. Gray market offerings are limited by the close control maintained over shipments by mills.

CONTROLS— The grave turn of events in Korea and deterioration of the international political situation is hastening application of production controls and curbs on supplies to so-called nonessential industries. While military and other defense requirements account for only a relatively small proportion of total output of steel at present, expectations are the mills will be virtually deluged with defense orders after turn of the year.

PRODUCTION— Steelmaking operations have completely recovered from the storm-induced shutdowns, the national ingot rate jumping 19.5 points to 101 per cent of capacity. Some plants in the Ohio river watershed are threatened now, however, by floodwaters.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Dec. 9	Change	Same Week 1949	Same Week 1948
Pittsburgh	101	+48*	92	96.5
Chicago	104	0*	96.5	99
Eastern Pa.	100	+ 2	83	97
Youngstown	104	+64	95	105
Wheeling	94	0	99	97.5
Cleveland	101	+22.5	92.5	99.5
Buffalo	104	0	103.5	104
Birmingham	100	0	100	100
New England	88	0	89	89
Cincinnati	102	+ 2	101	99
St. Louis	90.5	0	91.5	91.5
Detroit	106	+ 4	101	100
Western	102	+ 1	89	..
Estimated national rate	101	+19.5	93	100

Based on weekly steelmaking capacity of 1,906,268 net tons for first half and 1,928,721 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948. *Change from revised rate.

Composite Market Averages

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av. = 100)	167.67†	157.76	157.76	152.52	101.87
Index in cents per lb. ...	4.545†	4.274	4.274	4.132	2.760
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$100.53†	$95.09	$95.09	$91.64	$58.27
No. 2 Fdry, Pig Iron, GT	52.54	49.54	49.35	46.10	25.42
Basic Pig Iron, GT	52.04	49.04	49.04	45.60	24.75
Malleable Pig Iron, GT..	53.27	50.27	49.63	47.27	26.04
Steelmaking Scrap, GT ...	45.50	41.00	41.67	29.17	19.17

† Preliminary

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No.1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point. All prices for latest week preliminary.

FINISHED MATERIALS

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.70	3.45	3.45	3.35	2.25
Bars, H.R., Chicago	3.70	3.45	3.45	3.35	2.25
Bars, H.R., del. Philadelphia	4.18	3.98	3.93	3.83	2.57
Bars, C.F., Pittsburgh.....	4.55	4.15	4.15	3.95-4.00	2.75
Shapes, Std., Pittsburgh ..	3.65	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.65	3.40	3.40	3.25	2.10
Shapes, del. Philadelphia..	3.90	3.65	3.65	3.50	2.215
Plates, Pittsburgh	3.70	3.50	3.50	3.40	2.25
Plates, Chicago	3.70	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ...	4.15	3.90	3.90	3.50	2.25
Plates, Sparrows Point, Md.	3.70	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	4.15	3.90	3.90	3.50	2.25
Plates, del. Philadelphia ..	...	3.79	3.79	3.59	2.30
Sheets, H.R., Pittsburgh..	3.60-75	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.60	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.35	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.35	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.80	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh ...	3.75-4.00	3.50-75	3.50-75	3.25	2.10
Strip, H.R., Chicago	3.50	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh....	4.65-5.25	4.15-85	4.15-4.85	4.00	2.80
Strip, C.R., Chicago	4.30-4.90	4.30	4.30	4.00-15	2.90
Strip, C.R., Detroit	4.35-5.45	4.35-5.10	4.35-5.10	4.20-25	2.90
Wire, Basic, Pittsburgh ..	4.85-5.10	4.50-75	4.50-75	4.15	2.75
Nails, Wire, Pittsburgh...	5.90-6.20	5.30-60	5.30-60	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Billets, forging, Pitts.(NT)	$66.00	$63.00	$63.00	$61.00	$42.00
Wire rods, $\frac{7}{32}$-$\frac{3}{8}$", Pitts...	4.10-30	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$53.00	$50.00	$50.00	$47.00	$26.25
Basic, Valley	52.00	49.00	49.00	46.00	25.25
Basic, del. Phila.	56.39	53.39	53.39	49.44	27.09
No. 2 Fdry, Pitts.	52.50	49.50	49.50	46.50	25.75
No. 2 Fdry, Chicago	52.50	49.50	49.50	46.50	25.75
No. 2 Fdry, Valley	52.50	49.50	49.50	46.50	25.75
No. 2 Fdry, Del. Phila. ...	56.89	53.89	53.89	49.94	27.59
No. 2 Fdry, B'rm.	48.88	45.88	45.88	39.38	22.13
No. 2 Fdry (Birm.) del. Cin.	55.58	52.58	52.58	46.08	25.81
Malleable Valley	52.50	49.50	49.50	46.50	25.75
Malleable, Chicago	52.50	49.50	49.50	46.50	25.75
Charcoal, Lyles, Tenn.	66.00	62.00	62.00	60.00	33.00
Ferromanganese, Etna, Pa.	188.00	175.00	175.00	175.00	140.00*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
No. 1 Heavy Melt. Pitts...	$46.50	$44.00	$44.00	$32.00	$20.00
No. 1 Heavy Melt. E. Pa..	45.00	39.00	41.00	24.75	18.75
No. 1 Heavy Melt. Chicago	45.00	40.00	40.00	29.00	18.75
No. 1 Heavy Melt. Valley.	46.25	43.75	43.75	32.75	20.00
No. 1 Heavy Melt. Cleve..	45.75	43.25	43.25	30.25	19.50
No. 1 Heavy Melt. Buffalo.	41.50	41.50	41.50	29.75	19.25
Rails, Rerolling, Chicago .	65.50	65.50	64.50	43.50	22.25
No. 1 Cast, Chicago	62.00	61.00	59.00	42.50	20.00

COKE, Net Ton

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	16.50	16.50	16.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.00

NONFERROUS METALS

	Dec. 7 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Copper, del. Conn.	24.50	24.50	24.50	18.50	12.00
Zinc, E. St. Louis	17.50	17.50	17.50	9.75	8.25
Lead, St. Louis	16.80	16.80	16.80	11.80	6.35
Tin, New York	140.00	141.00	140.00	79.00	52.00
Aluminum, del.	19.00	19.00	19.00	17.00	15.00
Antimony, Laredo, Tex. ..	32.00	32.00	32.00	32.00	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Behtlehem,Pa. B2	*$54.00*	*$54.50*	*$55.00*	*$55.50*
Brooklyn,N.Y.,del.	....	*58.79*	*59.29*	....
Newark,del.	*56.63*	*57.13*	*57.63*	*58.13*
Philadelphia,del.	*56.39*	*56.89*	*57.39*	*57.89*
Birmingham District				
AlabamaCity,Ala. R2	*48.38*	*48.88*	....	....
Birmingham R2	*48.38*	*48.88*	....	....
Birmingham S9	*48.38*	*48.88*	....	....
Woodward,Ala. W15	*48.38*	*48.88*	....	....
Cincinnati,del.	....	*55.58*	....	....
Buffalo District				
Buffalo R2	*52.00*	*52.50*	*53.00*	....
Buffalo H1	*52.00*	*52.50*	*53.00*	....
Tonawanda,N.Y., W12	*52.00*	*52.50*	*53.00*	....
N.Tonawanda,N.Y., T9	....	*52.50*	*53.00*	....
Boston,del.	*61.26*	*61.76*	*62.20*	....
Rochester,N.Y.,del.	*54.63*	*55.13*	*55.63*	....
Syracuse,N.Y.,del.	*55.58*	*56.08*	*56.58*	....
Chicago District				
Chicago I-3	*52.00*	*52.50*	*52.50*	*52.00*
Gary,Ind. C3	*52.00*	....	*52.50*	....
IndianaHarbor,Ind. I-2	*52.00*	....	*52.50*	....
So.Chicago,Ill. W14	*52.00*	*52.50*	*52.50*	....
So.Chicago,Ill. Y1	*52.00*	*52.50*	*52.50*	
So.Chicago,Ill. C3	*52.00*		*52.50*	*53.00*
Milwaukee,del.	*53.89*	*54.39*	*54.39*	*54.89*
Muskegon,Mich.,del.	....	*57.98*	*57.98*	....
Cleveland District				
Cleveland A7	*52.00*	*52.50*	*52.50*	*53.00*
Cleveland R2	*52.00*	*52.50*	*52.50*	....
Akron, del. from Cleve.	*54.39*	*54.89*	*54.89*	*54.39*
Lorain,O. N3	*52.00*	....	....	*53.00*
Duluth I-3	....	....	*52.50*	
Erie,Pa. I-3	*52.00*	*52.50*	*52.50*	*53.00*
Everett,Mass. E1	....	52.25	52.75	....
Fontana,Calif. K1	55.00	55.50	....	....
Geneva,Utah G1	*52.00*	*52.50*	....	....
Seattle,Tacoma,Wash.,del. ...	....	*60.20*	....	....
Portland,Oreg.,del.	....	*60.20*	....	....
LosAngeles,SanFrancisco,del.	*59.70*	*60.20*	....	....
GraniteCity,Ill. M10	*53.90*	*54.40*	*54.90*	....
St.Louis,del. (inc. tax)	*54.65*	*55.15*	*55.65*	....
Ironton,Utah C11	*52.00*	*52.50*		....
LoneStar,Tex. L6	*48.00*	**48.50*	*48.50*	....
Minnequa,Colo. C10	49.00	49.50	50.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	*52.50*	*52.50*	*53.00*
Pitts.,N.&S. sides, Ambridge, Aliquippa, del.	....	*53.69*	*53.69*	*54.19*
McKeesRocks,del.	....	*53.45*	*53.45*	*53.95*
Lawrenceville,Homestead, McKeesport,Monaca,del.	....	*53.94*	*53.94*	*54.44*
Verona,del.	....	*54.40*	*54.40*	*54.90*
Brackenridge,del.	....	*54.63*	*54.63*	*55.13*
Bessemer,Pa. C3	*52.00*	....	*52.50*	*53.00*
Clairton,Rankin,So.Duquesne,Pa. C3 .	*52.00*	....	....	....
McKeesport,Pa. N3	*52.00*	....	....	*53.00*
Sharpsville,Pa. S6	....	....	*52.50*	*53.00*
Steelton,Pa. B2	*54.00*	*54.50*	*55.00*	*55.50*
Swedeland,Pa. A3	*56.00*	*56.50*	*57.00*	*57.50*
Toledo,O. I-3	*52.00*	*52.50*	*52.50*	*53.00*
Cincinnati,del.	*57.01*	*57.51*		....
Troy,N.Y. R2	*54.00*	*54.50*	*55.00*	*55.50*
Youngstown District				
Hubbard,O. Y1	*52.00*	*52.50*	*52.50*	....
Youngstown Y1	*52.00*	*52.50*	*52.50*	*53.00*
Mansfield,O.,del.	*56.26*	*56.76*	*56.76*	*57.26*

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$59.50
Buffalo H1	60.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for each 0.045% max. P)

NiagaraFalls,N.Y. P15	$83.00
Keokuk,Iowa, Openhearth & Fdry, frt. allowed K2	89.50
Keokuk, OH & Fdry., 12½ lb. piglets, 16% Si, frt. allowed K2.	92.50
Wenatchee,Wash., O.H. & Fdry., frt. allowed K2	89.50

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	*$66.00*

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	*$57.00*
Steelton,Pa. B2	*60.00*
Philadelphia delivered	*63.00*
Troy,N.Y. R2	*60.00*

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Semifinished and Finished Steel Products

Mill prices as reported to presstime Dec. 7, 1950; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)

Fontana,Calif. K1	$76.00
Munhall,Pa. C3	*52.00*

INGOTS, Alloy (NT)

Detroit R7	*$54.00*
Fontana,Calif. K1	77.00
Houston,Tex. S5	59.00
Midland,Pa. C18	*54.00*
Munhall,Pa. C3	*54.00*
So.Duquesne,Pa. C3	*54.00*

BILLETS, BLOOMS & Slabs

Carbon, Rerolling (NT)

Bessemer,Pa. C3	*$56.00*
Clairton,Pa. C3	*56.00*
Ensley,Ala. T2	*56.00*
Fairfield,Ala. T2	*56.00*
Fontana,Calif. K1	72.00
Gary,Ind. C3	*56.00*
Johnstown,Pa. B2	*56.00*
Lackawanna,N.Y. B2	*56.00*
Munhall,Pa. C3	*56.00*
So.Chicago,Ill. C3	*56.00*
So.Duquesne,Pa. C3	*56.00*

Carbon, Forging (NT)

Bessemer,Pa. C3	*$66.00*
Buffalo R2	*66.00*
Canton,O. R2	*66.00*
Clairton,Pa. C3	*66.00*
Cleveland R2	*66.00*
Conshohocken,Pa. A3	*73.00*
Detroit R7	*69.00*
Fairfield,Ala. T2	*66.00*
Fontana,Calif. K1	82.00
Gary,Ind. C3	*66.00*
Geneva,Utah G1	*66.00*
Houston,Tex. S5	71.00
Ind.Harbor,Ind. I-2	63.00
Johnstown,Pa. B2	*66.00*
Lackawanna,N.Y. B2	*66.00*
LosAngeles B3	*85.00*
Munhall,Pa. C3	*66.00*
Seattle B3	*85.00*
So.Chicago C3, R2	*66.00*
So.Chicago W14	63.00
So.Duquesne,Pa. C3	*66.00*
So.SanFrancisco B3	*85.00*

Alloy, Forging (NT)

Bethlehem,Pa. B2	*$70.00*
Buffalo R2	*70.00*
Canton,O. R2, T7	*70.00*
Conshohocken,Pa. A3	*77.00*
Detroit R7	*73.00*
Fontana,Calif. K1	85.00
Gary,Ind. C3	*70.00*
Houston,Tex. S5	74.00
Ind.Harbor,Ind. Y1	66.00
Johnstown,Pa. B2	*70.00*
Lackawanna,N.Y. B2	*70.00*
LosAngeles B3	*90.00*
Massillon,O. R2	*70.00*
Midland,Pa. C18	*70.00*
Munhall,Pa. C3	*70.00*
So.Chicago C3, R2	*70.00*
So.Chicago W14	66.00
So.Duquesne,Pa. C3	*70.00*
Warren,O. C17	66.00
Youngstown Y1	66.00

ROUNDS, SEAMLESS TUBE (NT)

Canton,O. R2	*$82.00*
Cleveland R2	*82.00*
Fontana,Calif. K1	100.00
Gary,Ind. C3	*82.00*
Ind.Harbor,Ind. I-2	76.00
Massillon,O. R2	*82.00*
So.Chicago,Ill. R2	*82.00*
So.Duquesne,Pa. C3	*82.00*

SHEET BARS (NT)

Fontana,Calif. K1	$86.00

SKELP

Aliquippa,Pa. J5	*3.45*
Munhall,Pa. C3	*3.35*
Warren,O. R2	*3.35*
Youngstown C3, R2	*3.35*

WIRE RODS

AlabamaCity,Ala. R2	*4.10*
Buffalo W12	3.85
Cleveland A7	*4.10*
Donora,Pa. A7	*4.10*
Fairfield,Ala. T2	*4.10*
Fontana,Calif. K1	4.60
Houston,Tex. S5	4.25
Ind.Harbor,Ind. Y1	3.85
Johnstown,Pa. B2	*4.10*
Joliet,Ill. A7	*4.10*
LosAngeles B3	*4.90*
Minnequa,Colo. C10	4.10
Monessen,Pa. P7	*4.30*
No.Tonawanda,N.Y. B11	3.85
Pittsburg,Calif. C11	*4.75*
Portsmouth,O. P12	*4.30*
Roebling,N.J. R5	3.95
So.Chicago,Ill. R2	*4.10*
SparrowsPoint,Md. B2	*4.20*
Sterling,Ill.(1) N15	4.10
Struthers,O. Y1	3.85
Torrance,Calif. C11	*4.90*
Worcester A7	*4.40*

STRUCTURALS

Carbon Steel Stand. Shapes

AlabamaCity,Ala. R2	*3.60*
Aliquippa,Pa. J5	*3.65*
Bessemer,Ala. T2	*3.65*
Bethlehem,Pa. B2	*3.70*
Clairton,Pa. C3	*3.65*
Fairfield,Ala. T2	*3.65*
Fontana,Calif. K1	4.00
Gary,Ind. C3	*3.65*
Geneva,Utah G1	*3.65*
Houston,Tex. S5	3.80
Ind.Harbor,Ind. I-2	3.40
Johnstown,Pa. B2	*3.70*
KansasCity,Mo. S5	4.00
Lackawanna,N.Y. B2	*3.70*
LosAngeles B3	*4.25*
Minnequa,Colo. C10	3.85
Munhall,Pa. C3	*3.65*
Niles,Calif.(22) P1	4.02
Phoenixville,Pa. P4	*4.95*
Portland,Oreg. O4	*4.50*
Seattle B3	*4.30*
So.Chicago,Ill. C3, W14	*3.65*
So.SanFrancisco B3	*4.20*
Torrance,Calif. C11	*4.25*
Weirton,W.Va. W6	*3.90*

Alloy Stand. Shapes

Clairton,Pa. C3	*4.35*
Fontana,Calif. K1	5.25
Munhall,Pa. C3	*4.35*
So.Chicago,Ill. C3	*4.35*

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5	*5.50*
Bessemer,Ala. T2	*5.50*
Bethlehem,Pa.(14) B2	*5.50*
Clairton,Pa. C3	*5.50*
Fairfield,Ala. T2	*5.50*
Fontana,Calif. K1	5.75
Gary,Ind. C3	*5.50*
Geneva,Utah G1	5.10
Ind.Harbor,Ind. I-2	5.15
Ind.Harbor,Ind. Y1	5.40
Johnstown,Pa. B2	*5.50*
Lackawanna,N.Y.(14)B2	*5.50*
LosAngeles B3	5.75
Munhall,Pa. C3	*5.50*
So.Chicago,Ill. C3	*5.50*
So.SanFrancisco B3	5.70
Struthers,O. Y1	5.40

Wide Flange

Bethlehem,Pa. B2	*3.70*
Lackawanna,N.Y. B2	*3.70*
Munhall,Pa. C3	*3.65*
So.Chicago,Ill. C3	*3.65*

H.S., L.A. Wide Flange

Bethlehem,Pa. B2	*5.50*
Lackawanna,N.Y. B2	*5.50*
Munhall,Pa. C3	*5.45*
So.Chicago,Ill. C3	*5.45*

SHEET STEEL PILING

Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	*4.45*
Munhall,Pa. C3	*4.45*
So.Chicago,Ill. C3	*4.45*

BEARING PILES

Munhall,Pa. C3	*3.65*
So.Chicago,Ill. C3	*3.65*

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5	*5.05*
Bessemer,Ala. T2	*5.05*
Clairton,Pa. C3	*5.05*
Cleveland J5, R2	*5.05*
Conshohocken,Pa. A3	*5.90*
Ecorse,Mich. G5	5.85
Fairfield,Ala. T2	*5.65*
Fontana,Calif. K1	5.95
Gary,Ind. C3	*5.65*
Geneva,Utah G1	*5.65*
Ind.Harbor,Ind. I-2	5.35
Ind.Harbor,Ind. Y1	5.60
Johnstown,Pa. B2	*5.65*
Munhall,Pa. C3	*5.65*
Pittsburgh J5	*5.65*
Sharon,Pa. S3	5.70
So.Chicago,Ill. C3	*5.65*
SparrowsPoint,Md. B2	*5.65*
Warren,O. R2	*5.65*
Youngstown Y1	5.60

PLATES, Open-Hearth Alloy

Coatesville,Pa. L7	*5.25*
Conshohocken,Pa. A3	*5.05*
Fontana,Calif. K1	5.40
Gary,Ind. C3	*4.75*
Johnstown,Pa. B2	*4.75*
Munhall,Pa. C3	*4.75*
Sharon,Pa. S3	*5.20*
So.Chicago,Ill. C3	*4.75*
SparrowsPoint,Md. B2	*4.75*

FLOOR PLATES

Cleveland J5	*4.75*
Conshohocken,Pa. A3	*4.75*
Harrisburg,Pa. C5	*5.95*
Ind.Harbor,Ind. I-2	4.55
Munhall,Pa. C3	*4.75*
So.Chicago,Ill. C3	*4.75*

PLATES (Universal Mill)

Fontana,Calif. K1	4.40

PLATES, Carbon A.R.

Fontana,Calif. K1	5.25

PLATES, Carbon Steel

AlabamaCity,Ala. R2	*3.70*
Aliquippa,Pa. J5	*3.70*
Ashland,Ky.(15) A10	*3.70*
Bessemer,Ala. T2	*3.70*
Clairton,Pa. C3	*3.70*
Claymont,Del. W16	*4.15*
Cleveland J5 R2	*3.70*
Coatesville,Pa. L7	*4.15*
Conshohocken,Pa. A3	*4.15*
Ecorse,Mich. G5	3.75
Fairfield,Ala. T2	*3.70*
Fontana,Calif. K1	4.10
Gary,Ind. C3	*3.70*
GraniteCity,Ill. G4	*4.40*
Geneva,Utah G1	*3.70*
Harrisburg,Pa. C5	*4.95*
Houston,Tex. S5	3.90
Ind.Harbor,Ind. I-2, Y1	3.50
Johnstown,Pa. B2	*3.70*
Lackawanna,N.Y. B2	*3.70*
Minnequa,Colo. C10	4.30
Munhall,Pa. C3	*3.70*
Pittsburgh J5	*3.70*
Seattle B3	*4.60*
Sharon,Pa. S3	*3.95*
So.Chicago,Ill. C3, W14	*3.70*
SparrowsPoint,Md. B2	*3.70*
Steubenville,O. W10	*3.70*
Warren,O. R2	*3.70*
Weirton,W.Va. W6	*4.00*
Youngstown C3, R2, Y1	*3.70*

PLATES, Wrought Iron

Economy,Pa. B14	*8.60*

PLATES, Ingot Iron

Ashland,c.l.(15) A10	*3.95*
Ashland,l.c.l.(15) A10	*4.45*
Cleveland,c.l. R2	4.10
Warren,O.c.l. R2	4.10

BARS, Hot-Rolled Carbon

AlabamaCity,Ala. R2	*3.70*
Aliquippa,Pa. J5	*3.70*
Alton,Ill.(1) L1	3.45
Atlanta,Ga. A11	4.00
Bessemer,Ala. T2	*3.70*
Buffalo R2	*3.70*
Canton,O. R2	*3.70*
Clairton,Pa. C3	*3.70*
Cleveland R2	*3.70*
Detroit R7	*3.85*
Ecorse,Mich. G5	3.65
Emeryville,Calif. J7	4.20
Fairfield,Ala. T2	*3.70*
Fontana,Calif. K1	4.10
Gary,Ind. C3	*3.70*
Houston,Tex. S5	3.85
Ind.Harbor,Ind. I-2, Y1	3.45
Johnstown,Pa. B2	*3.70*
KansasCity,Mo. S5	4.05
Lackawanna,N.Y. B2	*3.70*
LosAngeles B3	*4.40*
Milton,Pa. B6	3.70
Minnequa,Colo. C10	3.90
Niles,Calif. P1	4.17
N.Tonawanda,N.Y. B11	3.45
Pittsburg,Calif. C11	*4.40*
Pittsburgh J5	*3.70*
Portland,Oreg. O4	*4.05*
Seattle B3, N14	*4.45*
So.Chicago C3, R2, W14	*3.70*
So.Duquesne,Pa.C3	*3.70*
So.SanFran.,Cal. B3	*4.45*
Struthers,O. Y1	3.45
Torrance,Calif. C11	*4.40*
Weirton,W.Va. W6	*3.85*
Youngstown C3, R2	*3.70*

BAR SIZE ANGLES; S. SHAPES

Aliquippa,Pa. J5	*3.70*
Atlanta A11	4.00
Johnstown,Pa. B2	*3.70*
Lackawanna,N.Y. B2	*3.70*
Niles,Calif. P1	4.17
Portland,Oreg. O4	*4.65*
SanFrancisco S7	4.00

BAR SIZE ANGLES; H.R.CARBON

Bethlehem,Pa. B2	*3.90*

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2	*4.30*
Buffalo R2	*4.30*
Canton,O. R2, T7	*4.30*
Clairton,Pa. C3	*4.30*
Detroit R7	*4.45*
Ecorse,Mich. G5	4.25
Fontana,Calif. K1	4.95
Gary,Ind. C3	*4.30*
Houston,Tex. S5	4.35
Ind.Harbor,Ind. I-2, Y1	3.95
Johnstown,Pa. B2	*4.30*
KansasCity,Mo. S5	4.55
Lackawanna,N.Y. B2	*4.30*
LosAngeles B3	*5.35*
Massillon,O. R2	*4.30*
Midland,Pa. C18	*4.30*
So.Chicago C3, R2, W14	*4.30*
So.Duquesne,Pa. C3	*4.30*
Struthers,O. Y1	3.95
Warren,O. C17	4.20
Youngstown C3	*4.30*

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. C3	*4.55*
Fontana,Calif. K1	4.95
Gary,Ind. C3	*4.55*
Youngstown C3	*4.55*

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy

Aliquippa,Pa. J5	*5.55*
Atlanta A11	5.35
Bessemer,Ala. T2	*5.55*
Bethlehem,Pa. B2	*5.55*
Clairton,Pa. C3	*5.55*
Cleveland R2	*5.55*
Ecorse,Mich. G5	5.65
Fairfield,Ala. T2	*5.55*
Fontana,Calif. K1	6.25
Gary,Ind. C3	*5.55*
Ind.Harbor,Ind. I-2	5.20
IndianaHarbor,Ind. Y1	5.45
Johnstown,Pa. B2	*5.55*
Lackawanna,N.Y. B2	*5.55*
LosAngeles B3	5.90
Pittsburgh J5	*5.55*
So.Duquesne,Pa. C3	*5.55*
So.SanFrancisco B3	5.95
Struthers,O. Y1	5.45
Youngstown C3	*5.55*

BARS, Cold-Finished Carbon

Ambridge,Pa. W18	*4.55*
BeaverFalls,Pa. M12, R2	*4.55*
Buffalo B5	4.15
Camden,N.J. P13	*5.00*
Carnegie,Pa. C12	*4.55*
Chicago W18	*4.55*
Cleveland A7	4.15
Cleveland C20	*4.55*
Detroit P17	*4.70*
Donora,Pa. A7	4.15
Ecorse,Mich. G5	4.35
Elyria,O. W8	*4.55*
FranklinPark,Ill. N5	*4.55*
Gary,Ind. R2	*4.55*
GreenBay,Wis. F7	*4.15*
Hammond,Ind. L2, M13	*4.55*
Hartford,Conn. R2	*5.10*
Harvey,Ill. B5	4.15
LosAngeles R2	*6.00*
Mansfield,Mass. B5	4.55
Massillon,O. R2	*4.55*
Massillon,O. R8	*4.50*
Midland,Pa. C18	*4.55*
Monaca,Pa. S17	*4.55*
Newark,N.J. W18	*5.00*
Plymouth,Mich. P5	*4.80*
Pittsburgh J5	*4.55*
Putnam,Conn. W18	*5.10*
Readville,Mass. C14	4.55
St.Louis,Mo. M5	4.55
So.Chicago,Ill. W14	*4.55*
SpringCity,Pa.(5) K3	*5.00*
Struthers,O. Y1	4.15
Waukegan,Ill. A7	4.15
Youngstown F3, Y1	4.15

BARS, Cold-Finished Alloy

Ambridge,Pa. W18	*5.40*
BeaverFalls,Pa. M12	*5.40*
Bethlehem,Pa. B2	*5.40*
Buffalo B5	4.90
Camden,N.J. P13	*5.80*
Canton,O. R2, T7	*5.40*
Carnegie,Pa. C12	*5.40*
Chicago W18	*5.40*
Cleveland A7	4.90
Cleveland C20	*5.40*
Detroit P17	*5.55*
Donora,Pa. A7	4.90
Elyria,O. W8	*5.40*
Gary,Ind. R2	*5.40*
Hammond,Ind. L2, M13	*5.40*
Hartford,Conn. R2	*5.85*
Harvey,Ill. B5	4.90
Lackawanna,N.Y. B2	*5.40*
Mansfield,Mass. B5	5.20
Massillon,O. R2, R8	*5.40*
Midland,Pa. C18	*5.40*
Monaca,Pa. S17	*5.40*
Newark,N.J. W18	*5.75*
Plymouth,Mich. P5	*5.60*
So.Chicago,Ill. R2, W14	*5.40*
Struthers,O. Y1	4.90
Warren,O. C17	4.90
Waukegan,Ill. A7	4.90
Worcester,Mass. A7	5.20
Youngstown F3, Y1	4.90

RAIL STEEL BARS

ChicagoHts.(3,4)I-2, C2	*4.75*
Dallas,Tex.(4) S20	6.00
Franklin,Pa.(3,4) F5	*4.75*
FortWorth,Tex.(26) T4	4.63
Huntngtn,W.Va.(3) W7	4.00
Marion,O.(3) P11	*4.65*
Moline,Ill. (3) R2	*3.80*
Tonawanda(3,4) B12	*4.75*
Williamsport(3) S19	*5.00*
Williamsport(4) S19	*5.10*

BARS, Wrought Iron

Economy,Pa.(S.R.) B14	*9.60*
Economy,Pa.(D.R.)B14	*11.90*
Economy(Staybolt)B14	*12.20*
McK.Rks.(S.R.) L5	*9.60*

BARS, Reinforcing (Fabricators)

AlabamaCity,Ala. R2	*3.70*
Alton,Ill.(6) L1	3.45
Atlanta A11	4.00
Buffalo R2	*3.70*
Cleveland R2	*3.70*
Emeryville,Calif. J7	4.20
Fairfield,Ala. T2	*3.70*
Fontana,Calif. K1	4.10
Gary,Ind. C3	*3.70*
Houston,Tex. S5	3.85
Ind.Harbor,Ind. I-2, Y1	3.45
Johnstown,Pa. B2	*3.70*
KansasCity,Mo. S5	4.05
Lackawanna,N.Y. B2	*3.70*
LosAngeles B3	*4.40*
Milton,Pa. B6	3.70
Minnequa,Colo. C10	4.25
Niles,Calif. P1	4.17
Pittsburg,Calif. C11	*4.40*
Pittsburgh J5	*3.70*
Portland,Oreg. O4	*4.95*
Seattle B3, N14	*4.45*
So.Chicago,Ill. R2	*3.70*
So.Duquesne,Pa. C3	*3.70*
So.SanFrancisco B3	*4.45*
SparrowsPoint,Md. B2	*3.70*
Struthers,O. Y1	3.45
Torrance,Calif. C11	*4.40*
Youngstown C3, R2	*3.70*

BARS, Reinforcing

(Fabricated; to Consumers)

Huntington,W.Va. W7	4.50
Johnstown, ¼-1" B2	*4.75*
LosAngeles B3	*5.45*
Marion,O. P11	*5.00*
Seattle B3, N14	*5.55*
So.SanFrancisco B3	*5.45*
SparrowsPt., ¼-1" B2	*4.75*
Williamsport,Pa. S19	*5.10*

SHEETS, Hot-Rolled Steel

(18 gage and heavier)

AlabamaCity,Ala. R2	*3.60*
Ashland,Ky.(8) A10	*3.60*
Butler,Pa. A10	*3.60*
Cleveland J5	3.35
Cleveland R2	*3.60*
Conshohocken,Pa. A3	*4.00*
Detroit M1	*4.40*
Dover,O. R1	*5.65*
Ecorse,Mich.(8) G5	3.55
Fairfield,Ala. T2	*3.60*
Fontana,Calif. K1	4.25
Gary,Ind. C3	*3.60*
GraniteCity,Ill. G4	*4.30*
Geneva,Utah G1	*3.70*
Ind.Harbor,Ind. I-2, Y1	3.35
Irvin,Pa. C3	*3.60*
Lackawanna,N.Y. B2	*3.60*
Munhall,Pa. C3	*3.60*
Niles,O. N12	4.50
Pittsburg,Calif. C11	*4.30*
Pittsburgh J5	*3.60*
Sharon,Pa. S3	*4.00*
So.Chicago,Ill. W14	*3.60*
SparrowsPoint,Md. B2	*3.60*
Steubenville,O. W10	*3.60*
Torrance,Calif. C11	*4.30*
Warren,O. R2	*3.60*
Weirton,W.Va. W6	*3.60*
WestLeechburg,Pa. A4	*3.75*
Youngstown C3, Y1	*3.60*

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)

AlabamaCity,Ala. R2	*4.75*
Ind.Harbor,Ind. I-2	4.40
Mansfield,O. E6	4.15
Niles,O. N12	5.00
Torrance,Calif. C11	*5.40*

SHEETS, H-R (14-ga., heavier) High-Strength Low-Alloy

Cleveland J5, R2	*5.40*
Conshohocken,Pa. A3	*5.65*
Ecorse,Mich. G5	5.50
Fairfield,Ala. T2	*5.40*
Fontana,Calif. K1	6.00
Gary,Ind. C3	*5.40*
Ind.Harbor,Ind. I-2	5.05
IndianaHarbor,Ind. Y1	5.30
Irvin,Pa. C3	*5.40*
Lackawanna(35) B2	*5.40*
Pittsburgh J5	*5.40*
Sharon,Pa. S3	5.40
So.Chicago,Ill. C3	*5.40*
SparrowsPoint(36) B2	*5.40*
Warren,O. R2	*5.40*
Weirton,W.Va. W6	*5.75*
Youngstown C3	*5.40*
Youngstown Y1	5.30

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2	*6.55*
Ecorse,Mich. G5	6.65
Fontana,Calif. K1	7.05
Gary,Ind. C3	*6.55*
Ind.Harbor,Ind. I-2	6.20
IndianaHarbor,Ind. Y1	6.45
Irvin,Pa. C3	*6.55*
Lackawanna(37) B2	*6.55*
Pittsburgh J5	*6.55*
SparrowsPoint(38) B2	*6.55*
Warren,O. R2	*6.55*
Weirton,W.Va. W6	*6.90*

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	*4.35*
Cleveland J5, R2	*4.35*
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	*4.35*
Follansbee,W.Va. F4	*5.35*
Fontana,Calif. K1	5.00
Gary,Ind. C3	*4.35*
GraniteCity,Ill. G4	*5.05*
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	*4.35*
Lackawanna,N.Y. B2	*4.35*
Middletown,O. A10	*4.35*
Pittsburg,Calif. C11	*5.30*
Pittsburgh J5	*4.35*
SparrowsPoint,Md. B2	*4.35*
Steubenville,O. W10	*4.35*
Warren,O. R2	*4.35*
Weirton,W.Va. W6	*4.35*
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	*4.80*
Ashland,Ky.(8) A10	*4.80*
Canton,O. R2	*4.80*
Dover,O. R1	*5.50*
Fairfield,Ala. T2	*4.80*
Gary,Ind. C3	*4.80*
GraniteCity,Ill. G4	*5.50*
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	*4.80*
Kokomo,Ind.(13) C16	4.80
MartinsFerry,O. W10	*4.80*
Niles,O. N12	5.50
Pittsburg,Calif. C11	*5.55*
SparrowsPoint,Md. B2	*4.80*
Steubenville,O. W10	4.40
Torrance,Calif. C11	*5.55*
Weirton,W.Va. W6	*4.80*

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	*5.35*
Irvin,Pa. C3	4.95
Kokomo,Ind.(13) C16	5.35
Niles,O. N12	6.05

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	*5.05*
Middletown,O. A10	*5.05*

SHEETS, Electro Galvanized

Cleveland R2 (28)	*5.65*
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	*5.50*

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	*5.20*
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	*5.20*
Niles,O. N12	5.30
Weirton,W.Va. W6	*5.20*

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	*5.60*

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	6.35

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED Stock, 29 Ga.

Yorkville,O. W10	6.00
Follansbee,W.Va.(23)F4	5.70

SHEETS, Culvert

No. 16	Cu Alloy	Cu Fe
Ashland A10	*5.60*	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	*5.60*	*5.85*
Gary C3	*5.60*	*5.85*
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	*5.60*	*5.85*
Kokomo C16	5.80	...
MartinsFy.O. W10	*5.60*	*5.85*
Pittsburg,Cal. C11	*6.35*	...
SparrowsPt. B2	*5.60*	...
Torrance,Cal. C11	*6.35*	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	*5.85*
Fairfield,Ala. T2	*5.85*

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	*3.85*
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	*4.85*
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	*5.05*
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	*5.30*
Middletown,O. A10	*5.30*

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	*8.15*

SHEETS, Well Casing

Fontana,Calif. K1	4.80
TorranceCalif. C11	*5.10*

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)

	Field	Armature	Electric	Motor	Dynamo
BeechBottom W10(cut lengths)	...	...	*7.25*	*8.50*	*9.30*
Brackenridge,Pa. A4	...	...	*7.75*	*9.00*	*9.80*
GraniteCity,Ill. G4 (cut lengths)	...	...	*7.95*	*9.20*	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.50	7.00	...	...
Vandergrift,Pa. C3	...	...	*7.25*	...	...
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	*7.25*	*7.75*	*9.00*	*9.80*

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	*10.35*	....	....	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	*10.35*	*10.90*	*11.60*	*12.40*

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)

	1.25 lb	1.50 lb
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Ind.Har. I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.80
Follansbee,W.Va. F4	*5.55*
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	*4.65*
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	*5.35*
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	*4.65*
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	*5.55*
Ecorse,Mich. G5	5.40
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	5.90
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2	4.95
IndianaHarbor,Ind. Y1	5.20
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	*5.40*
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	*5.75*
Youngstown Y1	5.20
Youngstown C3	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	*5.85*
Fontana,Calif. K1	6.30
Gary,Ind. C3	*5.50*
Houston,Tex. S5	5.50
KansasCity, Mo. S5	5.70
NewBritn,Conn.(10) S15	5.45
Sharon,Pa. S3	*5.85*
Youngstown C3	*5.50*

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	*3.75*
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	*3.50*
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	*3.50*
Atlanta A11	3.80
Bessemer,Ala. T2	*3.50*
Bridgeprt,Conn.(10) S15	3.75
Buffalo(27) R2	*3.50*
Butler,Pa. A10	*3.50*
Carnegie,Pa. S18	*4.00*
Conshohocken,Pa. A3	*3.90*
Detroit M1	*4.40*
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	*3.50*
Fontana,Calif. K1	4.40
Gary,Ind. C3	*3.50*
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
Johnstown,Pa.(25) B2	*3.50*
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y.(32) B2	*3.50*
LosAngeles B3	*4.25*
Milton,Pa. B6	3.50
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.75
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	*3.50*
SanFrancisco S7	4.00
Seattle B3, N14	*4.50*
Sharon,Pa. S3	*4.00*
So.Chicago,Ill. W14	*3.50*
So.SanFrancisco B3	*4.25*
SparrowsPoint,Md. B2	*3.50*
Torrance,Calif. C11	4.00
Warren,O. R2	*3.50*
Weirton,W.Va. W6	*3.60*
WestLeechburg,Pa. A4	*3.75*
Youngstown C3, Y1	*3.50*

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	10.10
Carnegie,Pa. S18	*10.60*
Cleveland A7	9.50
Dover,O. G6	10.00
Fontana,Calif. K1	11.15
Harrison,N.J. C18	*10.00*
NewBritn.Conn.(10) S15	10.10
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	*10.60*
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.00
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	4.85
Butler,Pa. A10	*4.65*
Cleveland A7, J5	*4.65*
Dearborn,Mich. D3	5.10
Detroit D2	5.10
Detroit M1	*5.45*
Dover,O. (40) G6	5.00
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	*5.35*
Fontana,Calif. K1	5.75
FranklinPark,Ill. T6	4.50
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	*4.65*
LosAngeles C1	5.85
Mattapan,Mass. T6	5.00
Middletown,O. A10	*4.65*
NewBritain(10) S15	4.85
NewCastle,Pa. B4	4.85
NewCastle,Pa.(40) E5	*5.25*
NewHaven,Conn. D2	5.35
NewHaven,Conn. A7	*5.15*
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill.(40) A1	*4.90*
Rome,N.Y. R6	4.15
Sharon,Pa. S3	*5.35*
SparrowsPoint,Md. B2	*4.65*
Trenton,N.J. R5	5.50
Wallingford,Conn. W2	5.35
Warren,O.(40) T5	4.75
Warren,O. R2	*4.65*
Weirton,W.Va. W6	*4.65*
WestLeechburg,Pa. A4	*4.65*
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	*6.70*
Dover,O. G6	6.80
Ecorse,Mich. G5	6.65
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	*7.20*
Youngstown Y1	6.45

STRIP, Electro Galvanized

Cleveland A7	*4.65*
Dover,O. G6	5.00
Warren,O. T5	4.75
Weirton,W.Va. W6	*4.65*
Youngstown C8	4.15

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bridgeport,Conn.(10) S15	4.85	6.30	6.90	8.85	11.15
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	*6.80*	*7.40*	*9.35*	*11.65*
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Detroit D2	5.10	6.15	6.75	...	....
Detroit(21) D2	5.35	6.25	6.85	...	....
Dover,O. G6	5.00	6.30	6.90	8.85	11.15
FranklinPark,Ill. T6	4.50	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	7.20	9.15	11.45
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.85	6.30	6.90	8.85	11.15
NewCastle,Pa. B4	4.85	6.30	6.90	8.85	....
NewCastle,Pa. E5	*5.50*	*6.80*	*7.40*	*9.35*	*11.65*
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester.Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	*5.35*	*6.80*	*7.40*	*9.35*	*11.65*
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	10.05	12.00	14.60

Key to Producing Companies

A1	Acme Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A7	American Steel & Wire
A8	Anchor Drawn Steel Co.
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A13	American Cladmetals Co.
B1	Babcock & Wilcox Tube
B2	Bethlehem Steel Co.
B3	Beth. Pac. Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B6	Boiardi Steel Corp.
B8	Braeburn Alloy Steel
B11	Buffalo Bolt Co.
B12	Buffalo Steel Co.
B14	A.M. Byers Co.
C1	Calif. Cold Rolled Steel
C2	Calumet Steel Div., Borg-Warner Corp.
C3	Carnegie-Illinois Steel
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp.
C7	Cleve.Cold.Roll.Mills Co.
C8	Cold Metal Products Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia Steel Co.
C12	Columbia Steel & Shaft.
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
D2	Detroit Steel Corp.
D3	Detroit Tube & Steel
D4	Disston & Sons, Henry
D6	Driver Harris Co.
D7	Dickson Weatherproof Nail Co.
E1	Eastern Gas&Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Steel
F3	Fitzsimons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div., Borg-Warner Corp.
F6	Fretz-Moon Tube Co.
F7	Ft. Howard Steel & Wire
G1	Geneva Steel Co.
G2	Globe Iron Co.
G3	Globe Steel Tubes Co.
G4	Granite City Steel Co.
G5	Great Lakes Steel Corp.
G6	Greer Steel Co.
H1	Hanna Furnace Corp.
H4	Heppenstall Co.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div., Borg-Warner Corp.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro-Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Electric Steel
L5	Lockhart Iron & Steel
L6	Lone Star Steel Co.
L7	Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.80
Riverdale,Ill. A1	*3.90*
Sharon,Pa. S3	*4.15*
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	*6.25*
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	*6.25*
Buffalo W12	5.90
Cleveland A7	*6.25*
Donora,Pa. A7	*6.25*
Duluth A7	*6.25*
Fostoria,O. S1	6.20
Johnstown,Pa. B2	*6.25*
LosAngeles B3	*7.20*
Millbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	*6.25*
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	*7.20*
Roebling,N.J. R5	6.20
Portsmouht,O. P12	*6.25*
So.Chicago,Ill. R2	*6.25*
SparrowsPoint,Md. B2	*6.35*
Struthers,O. Y1	5.90
Trenton,N.J. A7	*6.55*
Waukegan,Ill. A7	*6.25*
Williamsport,Pa. B2	*(41)*
Worcester A7, J4	*6.55*
Worctr,Mass.N6,T6,W12	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.70
Buffalo W12	5.35
Cleveland A7	*5.85*
Crawfordsville,Ind. M8	5.35
Dover,O. G6	5.70
Fostoria,O. S1	6.00
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	*5.85*
Monessen,Pa. P16	*5.85*
Monessen,Pa. P7	*6.10*
Pawtucket,R.I.(12) N8	6.00
Trenton,N.J. R5	5.65
Worcester T6, W12	5.65
Worcester A7	*6.00*

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	*8.90*
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	*8.90*
Crawfordsville,Ind. M8	8.45
Fostoria,O. S1	8.90
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	*8.90*
Palmer,Mass. W12	8.75
Portsmouth,O. P12	*8.90*
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	*8.90*
Worcester,Mass. T6	8.75
Worcester,Mass. A7	*9.20*

WIRE, Manufacturers Bright,

AlabamaCity,Ala. R2	*4.85*
Aliquippa,Pa. J5	*4.85*
Atlanta A11	4.85
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	*4.85*
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, R2	*4.85*
Cleveland C20	*4.55*
Crawfordsville,Ind. M8	4.60
Donora,Pa. A7	*4.85*
Duluth A7	*4.85*
Fairfield,Ala. T2	*4.85*
Fostoria,O.(24) S1	5.00
Houston S5	4.90
Johnstown,Pa. B2	*4.85*
Joliet,Ill. A7	*4.85*
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.85
LosAngeles B3	*5.80*
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	*5.10*
Newark, 6-8ga. I-1	5.15
No.Tonawanda B11	4.50
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	*5.80*
Portsmouth,O. P12	*5.25*
Rankin,Pa. A7	*4.85*
So.Chicago,Ill. R2	*4.85*
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	*4.95*
Sterling,Ill.(1) N15	*4.85*
Struthers,O. Y1	4.50
Torrance,Calif. C11	*5.80*
Waukegan,Ill. A7	*4.85*
Worcester,Mass. A7	4.80
Worcester,Mass. T6	*5.15*

WIRE, Upholstery Spring

Aliquippa,Pa. J5	*5.90*
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	*5.90*
LosAngeles B3	*6.85*
Monessen,Pa. P7, P16	*5.90*
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	*6.20*
Portsmouth,O. P12	*5.90*
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	*6.00*
Torrance,Calif. C11	*6.85*
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	*8.50*
Monessen,Pa. P16	*8.50*
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

ROPE WIRE

ROPE WIRE	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	*8.55*	*8.55*	*8.80*
Buffalo W12	8.05	8.05	8.30
Cleveland A7	*8.55*	*8.55*	*8.80*
Donora,Pa. A7	*8.55*	*8.55*	*8.80*
Fostoria,O. S1	8.35	8.35	8.60
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P16	*8.55*	*8.55*	*8.80*
Monessen,Pa. P7	*8.80*	*8.80*	*9.05*
NewHaven,Conn. A7	*8.85*	*8.85*	*9.10*
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	*8.55*	*8.55*	*8.80*
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	*8.85*	*8.85*	*9.10*
Waukegan,Ill. A7	*8.55*	*8.55*	*8.80*
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

WIRE, Merchant Quality (6 to 8 gage)

	An'ld	Galv.
AlabamaCity R2	*5.70*	*5.95*
Aliquippa J5	*5.70*	*6.15*
Atlanta A11	5.70	5.95
Bartonville(19)K4	*5.95*	*6.15*
Buffalo(31) W12	4.50	...
Cleveland A7	*5.70*	*5.85*
Crawfordsville M8	5.45	5.95
Donora A7	*5.70*	*5.85*
Duluth A7	*5.70*	*5.85*
Fairfield T2	*5.70*	*5.95*
Houston,Tex. S5	5.75	6.00
Johnstown B2	*5.70*	*6.15*
Joliet,Ill. A7	*5.70*	*5.85*
KansasCy,Mo. S5	5.95	6.20
Kokomo C16	5.70	5.95
LosAngeles B3	6.30	...
Minnequa C10	5.60	6.10
Monessen P7	*5.95*	*6.40*
Palmer(31) W12	4.80	...
Pitts.Calif. C11	*6.65*	*6.80*
Prtsmth.(18)P12	*6.10*	*6.60*
Rankin A7	*5.70*	*5.85*
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.80
SparrowsPt. B2	*5.80*	*6.25*
Sterling,Ill.(1) N15	*5.70*	*6.15*
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	*6.65*	
Worcester A7	*6.00*	*6.15*

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	*10.15*	*11.85*
Bartonville(1) K4	*10.25*	*11.95*
Cleveland A7	*10.25*	*12.15*
Crawfordsville M8	9.80	11.30
Fostoria,O. S1	10.40	12.40
Johnstown B2	*10.15*	*12.05*
Kokomo C16	9.80	11.30
Minnequa C10	10.05	12.05
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.55
Prtsmth.(18) P12	*10.55*	*12.30*
SparrowsPt. B2	*10.25*	*12.15*
Waukegan A7	*10.25*	*12.15*

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	*136*
Aliquippa,Pa. J5	*140*
Atlanta A11	133
Bartonville,Ill.(19) K4	*143*
Crawfordsville M8	135
Donora,Pa A7	*140*
Duluth,Minn. A7	*140*
Fairfield,Ala. T2	*140*
Houston,Tex. S5	134
Johnstown,Pa. B2	*140*
Joliet,Ill. A7	*140*
KansasCity,Mo. S5	138
Kokomo,Ind. C16	135
Minnequa,Colo. C10	136
Monessen,Pa. P7	*145*
Pittsburg,Calif. C11	*160*
Portsmouth,O.(18) P12	*147*
Rankin,Pa. A7	*140*
So.Chicago,Ill. R2	*136*
So.SanFran.,Calif. C10	151
SparrowsPoint,Md. B2	*142*
Sterling,Ill.(1) N15	*140*

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	*140*
Duluth A7	*125*
Franklin,Pa. F5	*140*
Huntington,W.Va. W7	125
Johnstown,Pa. B2	125
Joliet,Ill. A7	*125*
Marion,O. P11	125
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Tonawanda(42) B12	*140*
Williamsport,Pa. S19	*150*

WOVEN FENCE, 9-15½ Ga.

	Col.
AlabamaCity,Ala. R2	*126*
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga. J5	*130*
Atlanta A11	123
Bartonville,Ill.(19) K4	*130*
Crawfordsville,Ind. M8	123
Donora,Pa. A7	*130*
Duluth A7	*130*
Houston,Tex. S5	124
Fairfield,Ala. T2	*130*
Johnstown,Pa. B2	*130*
Johnstown,17ga.6" B2	*204*
Johnstown,17ga.,4" B2	*207*
Joliet,Ill. A7	*130*
KansasCity,Mo. S5	128
Kokomo,Ind. C16	123
Minnequa,Colo. C10	128
Monessen,Pa. P7	*135*
Pittsburg,Calif. C11	*153*
Portsmouth,O.(18) P12	*137*
Rankin,Pa. A7	*130*
So.Chicago,Ill. R2	*126*
Sterling,Ill.(1) N15	*130*

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	*123*
Atlanta A11	119
Bartonville,Ill.(19) K4	*123*
Chicago W13	113
Crawfordsville M8	120
Donora,Pa. A7	*123*
Duluth A7	*123*
Fairfield,Ala. T2	*123*
Joliet,Ill. A7	*123*
KansasCity,Mo. S5	125
Kokomo,Ind. C16	120
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	*147*
So.Chicago,Ill. R2	*123*
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	*125*
Sterling,Ill.(1) N15	*123*

AXLES

Ind.Harbor,Ind. S13	5.25
Johnstown,Pa.B2	*5.60*

JOINT BARS

Bessemer,Pa. C3	*4.70*
Fairfield,Ala. T2	*4.70*
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	*4.70*
Lackawanna,N.Y. B2	*4.70*
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	*4.70*

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	*6.15*
Minnequa,Colo. C10	5.60
Pittsburgh J5	*6.15*
Seattle B3	*6.65*
So.Chicago,Ill. R2	*6.15*
Struthers,O. Y1	5.60
Youngstown R2	*6.15*

NAILS & STAPLES, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	*118*
Aliquippa,Pa.(13) J5	*118*
Atlanta A11	113
Bartonville,Ill.(19) K4	*118*
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. M8	112
Donora,Pa. A7	*118*
Duluth A7	*118*
Fairfield,Ala. T2	*118*
Galveston,Tex. D7	*126*
Houston,Tex. S5	114
Johnstown,Pa. B2	*118*
Joliet,Ill. A7	*118*
KansasCity,Mo. S5	118
Kokomo,Ind. C16	112
Minnequa,Colo. C10	111
Monessen,Pa. P7	*124*
Pittsburg,Calif. C11	*137*
Portsmouth,O. P12	*124*
Rankin,Pa. A7	*118*
So.Chicago,Ill. R2	*118*
SparrowsPoint,Md. B2	*120*
Sterling,Ill.(1) N15	*118*
Torrance,Calif. C11	*138*
Worcester,Mass. A7	*124*

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	*5.95*
Crawfordsville,Ind. M8	5.90
Donora,Pa. A7	*5.95*
Duluth A7	*5.95*
Johnstown,Pa. B2	*5.95*
Joliet,Ill. A7	*5.95*
Kokomo,Ind. C16	5.65
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	*6.90*
Portsmouth,O. P12	*6.25*
Rankin,Pa. A7	*5.95*
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	*6.05*
Sterling,Ill.(1) N15	5.65
Worcester,Mass. A7	*6.25*

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	*$7.35*
Wheeling,W.Va. W10	*7.15*

TIE PLATES

Fairfield,Ala. T2	*4.50*
Gary,Ind. C3	*4.50*
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	*4.50*
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	*4.65*
Seattle B3	*4.65*
Steelton,Pa. B2	*4.50*
Torrance,Calif. C11	*4.65*

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	*9.85*
Minnequa,Colo. C10	9.10
Pittsburgh O3, P14	9.10
Seattle B3	*10.10*

RAILS

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	*3.60*	*3.50*	*3.55*	*4.00*
Ensley,Ala. T2	*3.60*	*3.50*	...	*4.00*
Fairfield,Ala. T2				*4.00*
Gary,Ind. C3	*3.60*	*3.50*	*3.55*	
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2				*(16)4.00*
Lackawanna B2	*3.60*	*3.50*	...	*4.00*
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	*3.60*	*3.50*	...	
Williamsport,Pa. S19				*4.75*

TOOL STEELS

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	*23.00*	*18W,4Cr,3V*	*140.00*
Extra Carbon	*27.00*	*18W,4Cr,2V,9Co*	*204.00*
Spec. Carobn	*32.50*	*19W,4Cr,2V,7Co*	*204.00*
Oil Hardening	*35.00*	*18.25W,4.25Cr,1V,4.75Co*	*172.00*
Cr Hot Wrk.	*35.00*	*20.25W,4.25Cr,1.6V,12.25Co*	*323.00*
Hi-Carbon-Cr	*63.50*	*1.5W,4Cr,1V,8.5Mo*	*78.50*
18W,4Cr,1V	*110.00*	*6.4W,4.5Cr,1.9V,5Mo*	*84.00*
18W,4Cr,2V	*124.50*	*6W,4Cr,3V,6Mo*	*106.50*

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3.

Key to Producing Companies

M1	McLouth Steel Corp.
M4	Mahoning Valley Steel
M5	Medart Co.
M6	Mercer Tube & Mfg. Co.
M8	Mid-States Steel & Wire
M9	Midvale Co.
M10	Missouri-Illinois Furnace
M12	Moltrup Steel Products
M13	Monarch Steel Co.
M14	McInnes Steel Co.
N2	National Supply Co.
N3	National Tube Co.
N5	Nelsen Steel & Wire Co.
N6	NewEng.HighCarb.Wire
N8	Newman-Crosby Steel
N12	Niles Rolling Mill Co.
N14	Nrthwst. Steel Roll.Mills
N15	Northwestern S.&W. Co.
N16	New Delphos Mfg. Co.
O3	Oliver Iron & Steel Corp.
O4	Oregon Steel Mills
P1	Pacific States Steel Corp.
P2	Pacific Tube Co.
P4	Phoenix Iron & Steel Co.
P5	Pilgrim Drawn Steel
P6	Pittsburgh Coke&Chem.
P7	Pittsburgh Steel Co.
P9	Pittsburgh Tube Co.
P11	Pollak Steel Co.
P12	Porthsmouth Division, Detroit Steel Corp.
P13	Precision Drawn Steel
P14	Pitts.Screw & Bolt Co.
P15	Pittsburgh Metallurgical
P16	Page Steel & Wire Div., Amer. Chain & Cable
P17	Plymouth Steel Co.
R1	Reeves Steel & Mfg. Co.
R2	Republic Steel Corp.
R3	Rhode Island Steel Corp.
R5	Roebling's Sons, John A.
R6	Rome Strip Steel Co.
R7	Rotary Electric Steel Co.
R8	RelianceDiv.,EatonMfg.
S1	Senaca Wire & Mfg. Co.
S3	Sharon Steel Corp.
S5	Sheffield Steel Corp.
S6	Shenango Furnace Co.
S7	Simmons Co.
S8	Simonds Saw & Steel Co.
S9	Sloss-Sheffield,S.&I. Co.
S13	Standard Forgings Corp.
S14	Standard Tube Co.
S15	Stanley Works
S16	Struthers Iron & Steel
S17	Superior Drawn Steel Co.
S18	Superior Steel Corp.
S19	Sweet's Steel Co.
S20	Southern States Steel
T2	Tenn. Coal, Iron & R.R.
T3	Tenn.Prod. & Chem.
T4	Texas Steel Co.
T5	Thomas Steel Co.
T6	Thompson Wire Co.
T7	Timken Roller Bearing
T9	Tonawanda Iron Div. Am. Rad. & Stan. San.
U1	Ulster Iron Works
U4	Universal Cyclops Steel
V2	Vanadium Alloys Steel
V3	Vulcan Crucible Steel Co.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Corp.
W4	Washington Steel Corp.
W6	Weirton Steel Co.
W7	W. Va. Steel & Mfg. Co.
W8	West.Auto.Mach.Screw
W9	Wheatland Tube Co.
W10	Wheeling Steel Corp.
W12	Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div. International Harvester
W15	Woodward Iron Co.
W16	Worth Steel Co.
W18	Wyckoff Steel Co.
Y1	Youngstown Sheet&Tube

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base
(13) Add 0.50c for 17 Ga & heavier.
(14) Also wide flange beams.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(23) 14 gage.
(24) Deduct 0.20c for finer than 15 gage.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (⅝" bar elec. furn. billet, 5.03c); to consumers, 5.28c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Rd. edge or square edge.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) Price on application.
(42) Net ton.

STANDARD PIPE, T. & C.

(Prices shown are those in effect prior to Dec. 1)

BUTTWELD

Size Inches	List Per Ft	Pounds Per Ft	Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	33.5	4.0	2.0	4.0
¼	6.0	0.42	33.5	31.5	30.5	4.0	2.0	5.0
⅜	6.0	0.57	29.0	27.0	26.0	+1.5	+3.5	0.5
½	8.5	0.85	40.5	38.5	39.5	18.5	16.5	18.5
¾	11.5	1.13	43.5	41.5	42.5	22.5	20.5	21.5
1	17.0	1.68	46.0	44.0	45.0	28.0	24.0	25.0
1¼	23.0	2.28	46.5	44.5	45.5	26.5	24.5	25.5
1½	27.5	2.73	47.0	45.0	46.0	27.5	25.5	26.5
2	37.0	3.68	47.5	45.5	46.5	28.0	26.0	27.0
2½	58.5	5.82	48.0	46.0	47.0	28.5	26.5	27.5
3	76.5	7.62	48.0	46.0	47.0	28.5	26.5	27.5

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 48% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Monaca, Pa. P9 quotes 1½ pts higher on ⅛" and ¼", 2 pts higher on ⅜", 1½ pts higher on ½" and ¾", 1 pt higher on 1" and 1¼", ½ pt higher on 1½" through 3"; Sharon, Pa. M6 quotes 1 pt lower on ⅛", 1½ pts higher on ¼", ½ pt higher on ⅜" and 1 pt lower on ½", ½ pt lower on ¾", 1½ pts lower on 1" and 1¼", 2 pts lower on 1½" through 3"; Butler, Pa. F6, ⅛" through ⅜"; Benwood, W. Va. W10 quotes 3 pts lower on ⅛", 2 pts lower on ¼", 3 pts lower on ⅜"; Wheatland, Pa. W9 quotes ½ pt lower on ⅛" and ¼", 2½ pts higher on ½" and ¾", 2 pts higher on 1" and 1¼", 1½ pts higher on 1½" through 3". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, plus 23% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5 quotes 1 pt lower on ¾", 2 pts lower on 1", 1½ pts lower on 1¼", 2 pts lower on 1½" and 2", 1½ pts lower on 2½" and 3"; Etna, Pa. N2 plus 23% on 3½" and 4". Fontana, Calif. K1 quotes 11 pts lower on ½" and larger continuous weld and 11% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD

Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 3 pts lower on 2", 2½ pts lower on 2½-6 in.; Lorain, N3 quotes 1½ pts lower; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Gg.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	11.96	13.96
1¼	13	14.68	17.06	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.08	22.27	26.22
2¼	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.58	28.48	33.49
3	12	30.82	36.27	29.90	35.18

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10%	Strip Cold-Rolled Carbon Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
302	....	....	....	....	19.75	24.00	77.00
304	23.50	26.50-28.00	....	....	20.75-23.50	24.00-25.50	77.00
309	29.00	33.50	....	....	....	....	....
310	35.00	39.50	....	....	....	....	144.00
316	28.00	31.00-32.50	....	....	26.00	33.00-34.50	....
317	33.00	37.50	....	....	....	....	....
318	32.00	36.50	....	....	....	....	....
321	25.00	29.50	....	....	23.00	....	111.00
347	26.00	29.00-30.50	....	....	24.00	30.00-31.50	130.00
405	19.75	26.25	....	....	....	....	....
410	19.25	25.75	....	....	....	....	....
Nickel	31.00	41.00	33.50	45.00	....	....	....
Inconel	39.00	51.00	....	....	....	....	165.00
Monel	32.00	42.00	....	....	....	....	....
Copper*	....	....	21.70†	27.65‡	....	....	....

* Deoxidized. † 18.20c for hot-rolled. ‡ 24.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates. Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	*15*
9/16-in. & ⅝-in.	*18.5*
¾-in. and larger	*17.5*
Longer than 6 in.:	
All diams.	*14*
Lag bolts, all diams.:	
6 in. and shorter	*23*
over 6 in. long	*21*
Ribbed Necked Carriage	26
Blank	*34*
Plow	*34*
Step, Elevator, Tap, and Sleigh Shoe	*21*
Tire bolts	*12*
Boiler & Fitting-Up bolts	*31*

NUTS

H.P. & C.P.	Reg.	Heavy
Square:		
½-in. & smaller	*15*	*15*
9/16-in. & ⅝-in.	*12*	*6.5*
¾-in.-1½-in.	*9*	*1*
1⅝ in. & larger	*7.5*	*1*
H.P. Hex.:		
½-in. & smaller	*26*	*22*
9/16-in. & ⅝-in.	*16.5*	*6.5*
¾-in.-1½-in.	*12*	*2*
1⅝ in. & larger	*8.5*	*2*
C.P. Hex.:		
½-in. & smaller	*26*	*22*
9/16-in. & ⅝-in.	*23*	*17.5*
¾-in. & 1½-in.	*19.5*	*12*
1⅝-in. & larger	*12*	*6.5*

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.
½-in. & smaller	*35*	*28.5*
9/16-in. & ⅝-in.	*29.5*	*22*
¾-in.-1½-in.	*24*	*15*
1⅝-in. & larger	*13*	*8.5*
Light		
7/16-in. & smaller		*35*
½-in. to ⅝-in.		*28.5*
¾-in. to 1½-in.		*26*

STEEL STOVE BOLTS

F.o.b. plant; per cent off list in packages)

Plain finish	56 & 10
Plated finishes	41 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	47
¾-in. through 1 in.	40
Longer than 6 in.:	
⅝-in. & smaller	33
¾-in. through 1 in.	18

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	44
1 in. and smaller diam. x over 6 in.	33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	41
¼-in. diam. & larger	24
N.F. thread, all diams.	18

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger	*7.85c*
7/16-in. under	*36 off*

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ......List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	17.00
8 to 16	48,60,72	17.00
7	48,60	18.64
6	48,60	19.95
4,5½	40	20.48
3	40	21.53
2½	24,30	22.05
2	24,30	24.15
CARBON		
40	100,110	7.65
35	100,110	7.65
30	84,110	7.65
24	72 to 104	7.65
17 to 20	34,90	7.65
14	60,72	8.16
10,12	60	8.42

STAINLESS STEEL

(Prices, cents per lb, shown are those in effect prior to Dec. 1)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	39.00	32.00	30.00
302	39.00	34.50	30.00
303	41.00	38.00	32.50
304	41.00	36.50	31.50
309	53.50	52.50	48.00
316	54.50	56.50	47.50
321	47.00	46.00	35.50
347	51.50	50.00	40.00
410	34.50	28.50	24.50
416	35.00	35.00	25.00
420	42.00	46.00	30.00
430	37.00	29.00	25.00
501	25.60	24.00	13.00
502	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.

Baltimore, bars, wire and structurals A10.

Brackenridge, Pa., sheets A4.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., strip except Types 303, 416, 501 & 502, S18.

Cleveland, strip A7.

Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.

Dunkirk, N.Y., bars, wire A4.

Duquesne, Pa., bars C3.

Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

Harrison, N. J., Types 302, 304, 316 wire and strip D6.

Massillon, all products R2.

McKeesport, Pa., bars, sheets except Type 416 C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Reading, Pa., bars & strip C4.

Sharon, Pa., strip, except Types 303, 309, 316, 416, 501 and 502 S3.

So. Chicago, Ill., bars & structurals C3.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars, U4.

Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.

Washington, Pa., bars, sheets & strip, except Type 309 sheets 54.00c and bars 43.50c, J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 59.50c, strip 61.50c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4.

Youngstown, strip C8.

COAL CHEMICALS

Spot, cents per gallon, ovens	
Pure benzol	30.00-32.00
Toluol, one deg.	21.00-28.00
Industrial xylol	21.00-29.50
Per ton bulk, ovens	
Sulphate of ammonia	$32-45
Cents per pound, ovens	
Phenol, 40 (carlots, non returnable drums)	17.25
Do., less than carlots	18.00
Do., tank cars	15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $41; less than 60%, $38. Imported, net ton, duty paid, metallurgical grade, $28-$29.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge Iron	
98+% Fe, carlots	16.00
Swedish, c.i.f. New York, in bags	7.40-8.50
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe (minus 325 mesh)	48.50
Powder Flakes	44.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns	70.00-135.00
Aluminum:	
Carlots, freight allowed	27.50
Atomized, 500 lb drums, freight allowed	32.50
Brass, 10-ton lots	30.00-33.25
Copper:	
Electrolytic	36.75
Reduced	33.75-37.00
Lead	23.00
Manganese:	
Minus 100-mesh	52.00
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel unannealed	75.50
Nickel-Silver, 10-ton lots	43.25
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302	75.00
Tin	$1.575
Zinc, 10-ton lots	23.00-30.50
Tungsten:	Dollars
99%, minus 80 to 200 mesh, freight allowed:	
over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb.	3.00
98.8% minus 65 mesh, freight allowed:	
1000 lb and over	3.65
less than 1000 lb.	3.75
Molybdenum:	
99%, minus 80 to 200 mesh,	
over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb	2.75
82-88%, freight allowed,	
2000 lb and over	2.40
less than 2000 lb.	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS	
Connellsvl, fur.	$14.00-14.50
Connellsvl, fdry.	16.00-17.00
New River, foundry	19.50
Wise county, foundry	15.95
Wise county, furnace	15.20
OVEN FOUNDRY COKE	
Kearney, N. J., ovens	$22.75
Everett, Mass., ovens New England, del.	‡24.30
Chicago, ovens	21.00
Chicago del.	†22.45
Detroit, del.	24.91
Terre Haute, ovens	22.50
Milwaukee, ovens	23.00
Indianapolis, ovens	22.00
Chicago, del.	25.87
Cincinnati, del.	24.92
Detroit, del.	25.90
Ironton, O., ovens	21.50
Cincinnati, del.	24.06
Painesville, O., ovens	23.25
Buffalo, del.	25.37
Cleveland, del.	24.97
Erie, Pa., ovens	23.50
Birmingham, ovens	19.40
Birmingham, del.	20.45
Philadelphia, ovens	22.10
Neville Island, Pa., ovens	22.00
Swedeland, Pa., ovens	22.00
St. Louis, ovens	22.99
St. Louis, del.	24.12
Portsmouth, O., ovens	21.50
Cincinnati, del.	24.06
Detroit, ovens	23.00
Detroit, del.	*24.00
Buffalo, del.	26.04
Flint, del.	25.44
Pontiac, del.	24.39
Saginaw, del.	25.76

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.60. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York(city)	5.82	6.84	7.84	6.14	...	5.97	6.64	8.60	5.95	6.18	7.64
New York(c'try)	5.52	6.64	7.54	5.84	...	5.67	6.34	8.70	5.65	5.88	7.34
Boston (city) ..	5.95	6.75	7.89	5.90	...	5.80	6.39	8.70	5.95	6.58	7.48
Boston (c'try) .	5.75	6.55	7.69	5.70	...	5.60	6.19	8.50	5.75	6.38	7.28
Phila. (city) ..	7.15	7.05	8.25	6.35	...	6.30	7.11	8.90	6.15	6.30	7.40
Phila. (c'try) ..	6.90	6.80	8.00	6.10	...	6.05	6.86	8.65	5.90	6.05	7.15
Balt. (city) ...	5.80	7.04	8.27	6.24	...	6.24	7.09	...	6.34	6.00	7.64
Balt. (c'try) ..	5.60	6.84	8.07	6.04	...	6.04	6.89	...	6.14	5.80	7.44
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.55	...	6.80	5.83	...	5.73	6.30	...	5.83	5.65	7.33
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[5]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[5]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.70-6.95	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[5]	5.64	5.79	6.88
Cleveland (del.)	5.80	6.60	8.30	5.89	7.10	5.77	6.60-6.70	8.91	10.02	6.12	7.32
Cleve. (w'hse).	5.60	6.40	8.10	5.69	6.90	5.57	6.40-6.50	8.71	5.82	5.92	7.12
Cincin. (city) ..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.15	5.30	...	5.30	5.85	9.75††[5]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.95	5.10	...	5.10	5.65	9.55††[5]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	7.29	5.44	...	5.44	6.09	9.89††[5]	5.59	5.74	6.94
Milwau. (c'try).	5.29	6.09	7.09	5.24	...	5.24	5.89	9.69††[5]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[5]	5.78	5.93	7.12
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[5]	5.58	5.73	6.98
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. –	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.80	6.10	6.30[3]	5.25	...	5.25	6.88	...	5.40	5.70	7.88
Birm'hm(w'hse)	5.15	5.95	6.15[3]	5.10	...	5.10	...	...	5.25	5.55	...
Los Ang. (city)	6.55	8.10	9.05[3]	6.60	8.90	6.55	7.75	...	6.55	6.60	9.20
L. A. (w'hse)..	6.35	7.90	8.85[3]	6.40	8.70	6.35	7.55	...	6.35	6.40	8.70
San Francisco .	6.50[9]	7.60[2]	7.50[2]	7.45[9]	8.25[2]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma.	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—460 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Hayward, Ashland, Ky., Clearfield, Curwensville, Pa., Ottawa, Ill., $116.60. Hard-fired, St. Louis, Vandalia, Mo., Olive Hill, Ky., $156.20.

High-Heat Duty: Salina, Pa. $99.60; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, Curwensville, Lumber, Lockhaven, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Ky., Troup, Athens, Tex., Stevens Pottery, Ga., Bessemer, Ala., Portsmouth, Oak Hill, O., Ottawa, Ill., $94.60.

Intermediate-Heat Duty: St. Louis, Farber, Vandalia, Mo., West Decatur, Orviston, Beach Creek, Curwensville, Lumber, Lockhaven, St. Marys, Clearfield, Pa., Olive Hill, Hitchins, Haldeman, Ashland, Hayward, Ky., Athens, Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $88; Bessemer, Ala., $79.20.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., $79.20; Parral, O., $78.50; St. Marys, Pa., $76; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Chester, New Cumberland, W. Va., Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., $66.

Wire Cut: Chester, Wellsville, O., $64.

MALLEABLE BUNG BRICK

St. Louis, Vandalia, Farber, Mo., Olive Hill, Ky., $105.60; Beach Creek, Pa., $94.60; Ottawa, Ill., $90.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $94.60; Hays, Pa., $100.10; Joliet, Rockdale, Ill., E. Chicago, Ind., $104.50; Lehi, Utah, Los Angeles, $111.10.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $92.40.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $93.50.

BASIC BRICK

Per net ton, Baltimore or Chester, Pa. Burned chrome brick, $73; chemical-bonded chrome brick, $77; magnesite brick, $99; chemical-bonded magnesite, $88.

MAGNESITE

Per net ton, Chewelah, Wash. Domestic dead-burned, ⅜" grains; bulk, $36.30; single paper bags, $41.80.

DOLOMITE

Per net ton. Domestic, burned bulk; Bonne Terre, Mo., $12.15; Martin, Millersville, Narlo, Clay Center, Woodville, Gibsonburg, Bettsville, O., Billmeyer, Plymouth Meeting, Blue Bell, Williams, Pa., Millville, W. Va., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports.

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950 in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Old range bessemer	*$8.70*
Old range nonbessemer	*8.55*
Mesabi bessemer	*8.45*
Mesabi nonbessemer	*8.30*
High phosphorus	*8.30*

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates *contract*	*nominal*

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Chinese	$36.00
Brazilian	36.00
Bolivian	36.00
Domestic scheelite, del.	36.00

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00
South African Transvaal	
44% no ratio	*$19.50*
45% no ratio	*20.00*
48% no ratio	*27.00*
50% no ratio	*28.00-28.50*
Brazilian	
44% 2.5:1 lump	$32.00
Rhodesian	
45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00
Domestic—rail nearest seller	
48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $70, Palmerton, Pa.; $71, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $185 per gross ton of alloy, c.l., packed, $197; gross ton lots, packed, $212; less gross ton lots, packed, $229; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Welland, Ont., or Ashtabula, O. Base price: $187, Johnstown, Pa.; $185, Sheridan, Pa.; $188, Etna, Pa.; $190, Chattanooga, Tenn. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $227; less gross ton lots, $244 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 25.75c per lb of contained Mn, carload packed 26.5c, ton lot 27.6c, less ton 28.8c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max, 7% Si. **Special Grade:** (Mn 90% min., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max.). Carload, lump, bulk 19.15c per lb of contained Mn, carload packed 19.9c, ton lot 21.0c, less ton 22.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 29.75c; ton lot 31.25c; less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65 - 68%), Contract, lump bulk, 1.50% C grade, 18-20% Si 9.60c per lb of alloy, carload packed, 10.35c, ton lot 11.25c, less ton 12.25c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 21.75c per lb of contained Cr, c.l., packed 22.65c, ton lot 23.80c, less ton 25.20c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%,

(*Please turn to page* 158)

NPA Curbs Use of Nickel and Zinc

Nondefense use of zinc is reduced 20 per cent while that of nickel is cut 35 per cent, beginning Jan. 1. Restrictions on aluminum use are temporarily eased

Washington—National Production Authority is widening its curbs on use of metals for nondefense purposes. Restrictions on civilian use of nickel and zinc become effective Jan. 1. and join copper, aluminum and cobalt in the controlled group. As consumers switch to other metals for substitution, shortages will develop in other quarters, forcing the government to extend scope of its controls.

In view of developments in Korea, volume of DO orders will increase sharply as an increasing number of metalworking plants swing into government work. Some metal producers already have booked the preference orders up to the amount required under present regulations, indicating an upward revision of allotments for defense production.

Aluminum — NPA eased temporarily its previous aluminum cutback order. In place of the 35 per cent cut for civilian use ordered earlier for the first six months of 1951, the agency ordered a 20 per cent reduction in January and a 25 per cent cut in February. The cutback for March and following months remains at 35 per cent.

NPA said the reason for the relaxing of its aluminum cutback was to "provide for a less abrupt change in January and February. Changing the cutback to only 20 per cent in January from 35 per cent represented a substantial concession to criticism of the previous aluminum cutback which has been coming from both industry and labor. Critics claimed the earlier order was more drastic than was required by defense needs and would have unnecessarily forced closings and layoffs before defense orders could fill in the gap caused by the slash.

Zinc and Nickel—NPA slashed nonmilitary consumption of zinc by 20 per cent and of nickel by 35 per cent, beginning Jan. 1. These orders were the first concerned with actual limitations on both zinc and nickel, although the former was covered previously in regulations setting forth more even distribution of defense contracts.

Companies using nickel for nonmilitary purpose will be limited to 65 per cent of their average quarterly consumption during the first six months of 1950. Zinc users will get 80 per cent of the amount they used in the same base period.

Nickel for maintenance, repair and operating supplies will be permitted at 100 per cent of the average quarterly use in the base period. The same is true of zinc and zinc products in this category, although this section of the zinc order is retroactive to Dec. 1 rather than going into effect Jan. 1 of next year. Permitted inventories of nickel are limited to a 30-day supply; of zinc to a 45-day supply, or a practicable minimum working inventory, whichever is less.

Primary nickel forms covered by the order are electrolytic nickel ingots, pigs, rolled and cast anodes, oxides and residues.

Specific exemptions are listed for the metals. Companies which use more than 3000 pounds of zinc or zinc products quarterly will not be included. Also exempt are "certain highly specialized uses of zinc as well as use of zinc for electroplating where it replaces cadmium." Consumers using less than 250 pounds of primary nickel in a quarter are exempt.

W. H. Harrison, NPA administrator, said the metal orders are designed to maintain equitable distribution of nondefense supplies through normal channels with a pattern of use in effect during the first half of this year. He said it may be necessary later on to further tighten up on consumption of nickel for some purposes. This may take the form of a complete ban on use of nickel in nonessential products.

STEEL'S Metal Price Averages for Nov., 1950

(Cents per pound)

Electrolytic Copper, del. Conn.	24.50
Lead, St. Louis	16.80
Prime, Western Zinc, E. St. Louis	17.50
Straits Tin, New York	137.71
Primary Aluminum ingots, del.	19.00
Antimony, f.o.b. Laredo, Tex.	32.00
Nickel, f.o.b. refinery	48.00
Silver, New York	80.00

NEA

WHEELS FOR JETS: Meeting the demand caused by the stepped-up production of the world's fastest jet bomber, the B-47, these aircraft wheels are checked for shipment from the B. F. Goodrich plant at Troy, O. The wheels are made of magnesium to combine great strength with minimum weight. They're given the chromate treatment for corrosion protection. The entire assembly, including expander tube dual brakes, weighs 308 pounds

Copper Range To Develop Mine

Boston—An important new copper ore body, producing not less than 75 million pounds of the metal a year and capable of further expansion, is to be opened up. Later this month, officers of Copper Range Co. expect to present to government officials at Washington a preliminary program for development of the big copper ore body at the company's White Pine property in the Upper Michigan peninsula.

The program being outlined at the request of James Boyd, deputy administrator of the Defense Minerals Administration, will contain plans for development of a mine, construction of a mill with an initial capacity to handle 10,500 tons of ore daily, and the building of a metallurgical plant and a town site.

Morris F. La Croix, president of Copper Range, said the program will be supported by 300 million tons of proven ore with much more to be determined when the boundaries of the ore body are fully marked out. He believes the company can build a mill to recover 85 per cent of the copper in the ore. On the basis of results at a pilot plant operating since last summer, estimated costs of production are lower than anticipated originally.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingot: 85-5-5-5 (No. 115) 29.00c; 88-10-2 (No. 215) 44.50c; 80-10-10 (No. 305) 35.00c; No. 1 yellow (No. 405) 25.50c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 16.80c; chemical 16.90c; corroding 16.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 19.00c, pigs 18.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 31.00-32.00c; No. 12 foundry alloy (No. 2 grade) 30.50-31.00c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 32.50-33.00c; grade 2, 30.75-31.50c; grade 3, 30.00-30.50c; grade 4, 29.50-30.00c. Prices include freight at c.l. rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot, prompt, 140.00; Dec. 138.00; Jan. 134.50; Feb. 133.50; Mar. 132.50.

Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%; Chinese 34.00c; English, 32.75c; Belgian, 32.75c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, small lots, New York, $120-$125, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b., Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.55 del.; special or patented shapes $2.80.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 80.00c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.93-41.68; yellow brass 36.86-38.28; commercial bronze, 95%, 39.91-41.61; 90%, 39.48-41.13; red brass, 85%, 38.54-40.14; 80%, 38.12-39.67; best quality, 39.15; nickel silver, 18%, 50.57-51.91; phosphor-bronze grade A, 5%, 58.49-60.20.

Rods: Copper, hot-rolled 35.78-37.53; cold-drawn 37.03-38.78; yellow brass free cutting, 31.26-32.63; commercial bronze, 95%, 39.60-41.30; 90%, 39.17-40.82; red brass 85%, 38.23-39.83; 80%, 37.81-39.36.

Seamless Tubing: Copper 39.97-41.72; yellow brass 39.87-41.29; commercial bronze, 90%, 42.14-43.79; red brass, 85%, 41.45-43.05; 80%, 42.58.

Wire: Yellow brass 37.15-38.57; commercial bronze, 95%, 40.20; 90%, 39.77-41.42; red brass, 85%, 38.83-40.43; 80%, 38.41-39.96; best quality brass, 39.44.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 28.67-29.42, l.c.l. 29.17-29.92, 100,000 lb lots 28.545-29.295; weatherproof, f.o.b. eastern mills, c.l. 29.60, l.c.l. 30.10, 100,000 lb lots 29.35; magnet, del., 15,000 lb or more 34.50, l.c.l. 35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

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* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	——Hexagonal—— R317-T4	17S-T4
0.125	52.0	....	....
0.156-0.188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $22.00 per cwt; add 50c cwt 10 sq ft to 140 sq ft. Pipe: Full coils $22.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 23.50-23.75c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 22.50-23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 23.50-24.00c; over 12-in., 23.50-24.00.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 77.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-62.00c; 25 to 99 lb. 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 36.59-38.34c; oval 36.09-37.84c; cast 37.37c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 55.6c, under 1000 lb 57.6c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 19.00c; 1000 to 19,000 lb, 18.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 19.25c; over 200 lb 28.25c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c, 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 33.50c; 400-lb bbl. 31.50c up to 10,000 lb, 31.00c; over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 47.7c, 10 or more drums 45.7c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	23.00	23.00	22.25
Yellow Brass	20.125	19.875	18.75
Commercial Bronze			
95%	21.875	21.625	21.125
90%	21.75	21.50	21.00
Red brass			
85%	21.50	21.25	20.75
80%	21.375	21.125	20.625
Muntz metal	19.00	18.75	18.25
Nickel, silver, 10%..	22.25	22.00	11.125
Phos. bronze, A	24.00	23.75	22.75

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; composition red brass 22.50; radiators 17.50; heavy yellow brass 17.50.

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* Nominal.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.50*; No. 2 copper 20.00*; light copper 19.00*; refinery brass (60% copper) per dry copper content 19.50.

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* Nominal

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 20.00; No. 2 18.50; light copper 17.25; No. 1 composition red brass 16.50-17.00; No. 1 composition turnings 16.00-16.50; mixed brass turnings 11.00; new brass clippings 17.50-18.00; No. 1 brass rod turnings 16.00-16.50; light brass 11.00; clean heavy yellow brass 13.50; new brass rod ends 16.50-17.00; auto radiators 13.00-13.25; cocks and faucets, 14.75-15.00; brass pipe 15.75-16.00.

Lead: Heavy 14.50-14.75; battery plates 8.75-9.00; linotype and stereotype 14.50-14.75; electrotype 12.75-13.00; mixed babbitt 12.25-12.50.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 63.00-65.00; block tin pipe 90.00; No. 1 babbitt 58.00-60.00.

Aluminum: Clippings 2S 19.00-19.50; old sheets 15.50-16.00; crankcase 15.50-16.00; borings and turnings 12.00-12.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Dec. 7	24.50	16.80	17.50	140.00	19.00	32.00	48.00	80.00
Dec. 6	24.50	16.80	17.50	139.00	19.00	32.00	48.00	80.00
Dec. 5	24.50	16.80	17.50	139.50	19.00	32.00	48.00	80.00
Dec. 4	24.50	16.80	17.50	139.00	19.00	32.00	48.00	80.00
Dec. 1-2	24.50	16.80	17.50	136.00	19.00	32.00	48.00	80.00
Nov. Avg.	24.50	16.80	17.50	137.71	19.00	32.00	48.00	80.00
Nov. 30	24.50	16.80	17.50	139.00	19.00	32.00	48.00	80.00
Nov. 29	24.50	16.80	17.50	141.00	19.00	32.00	48.00	80.00
Nov. 28	24.50	16.80	17.50	140.50	19.00	32.00	48.00	80.00
Nov. 27	24.50	16.80	17.50	131.50	19.00	32.00	48.00	80.00
Nov. 24-25	24.50	16.80	17.50	135.00	19.00	32.00	48.00	80.00
Nov. 22	24.50	16.80	17.50	137.50	19.00	32.00	48.00	80.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumers prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, Dec. 7, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Dec. 7	$45.50
Nov. 30	41.00
Nov. 1950	41.33
Dec. 1949	28.03
Dec. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	*$46.50*
No. 2 Heavy Melt.	*44.50*
No. 1 Busheling	*46.50*
No. 1 Bundles	*46.50*
No. 2 Bundles	*43.50*
Heavy Turnings	*nominal*
Machine Shop Turnings	*38.50*
Mixed Borings, Turnings	*38.50*
Short Shovel Turnings	*40.50*
Cast Iron Borings	*nominal*
Low Phos. Steel	*48.50*

Cast Iron Grades

No. 1 Cupola Cast	55.00-56.00
No. 1 Machinery Cast	60.00-61.00
Charging Box Cast	54.00-55.00
Heavy Breakable Cast	53.00-54.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*46.50*
Rails, Random Lengths	*63.50-64.00**
Rails, 2 ft and under	*66.50-67.50**
Rails, 18 in. and under	*67.50-68.50**
Railroad Specialties	*61.00-62.00**

* Nominal

CLEVELAND

(*Delivered Consuming Plant*)

No. 1 Heavy Melt. Steel	*$45.50-46.00†*
No. 2 Heavy Melt. Steel	*43.50-44.00†*
No. 1 Busheling	*45.50-46.00†*
No. 1 Bundles	*45.50-46.00†*
No. 2 Bundles	*40.00-42.00*
Machine Shop Turnings	*37.50-38.00*
Mixed Borings, Turnings	*37.50-38.00*
Short Shovel Turnings	*39.50-40.00*
Cast Iron Borings	*39.50-40.00*
Low Phos.	*48.00-48.50*

Cast Iron Grades

No. 1 Cupola	*65.00-66.00*
Charging Box Cast	*53.00-54.00*
Stove Plate	*55.00-56.00*
Heavy Breakable Cast	*55.00-56.00*
Unstripped Motor Blocks	*44.00-45.00*
Brake Shoes	*50.00-51.00*
Clean Auto Cast	*65.00-66.00*
Burnt Cast	*46.00-47.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*46.00-46.50*
R.R. Malleable	*72.00-73.00*
Rails, 3 ft and under	*70.00-71.00*
Rails, 18 in. and under	*71.00-72.00*
Rails, Random Lengths	64.00-65.00
Cast Steel	*58.00-59.00*
Railroad Specialties	*60.00-61.00*
Uncut Tires	*60.00-61.00*
Angles, Splice Bars	*65.00-66.00*

† Plus applicable springboards

VALLEY

No. 1 Heavy Melt. Steel	*$46.00-46.50†*
No. 2 Heavy Melt. Steel	*44.00-44.50†*
No. 1 Bundles	*46.00-46.50†*
Facty. Prod. Bundles	*46.00-46.50†*
No. 2 Bundles	*40.50-42.50*
Machine Shop Turnings	*38.00-38.50*
Short Shovel Turnings	*40.00-40.50*
Cast Iron Borings	*40.00-40.50*
Low Phos.	*48.50-49.00*

† Plus applicable springboards

Railroad Scrap

No. 1 R.R. Heavy Melt.	*46.00-46.50*

PHILADELPHIA

No. 1 Heavy Melt. Steel	*$45.00*
No. 2 Heavy Melt. Steel	*43.00*
No. 1 Busheling	*43.00*
No. 1 Bundles	*45.00*
No. 2 Bundles	*42.00*
Short Shovel Turnings	*39.00*
Machine Shop Turnings	*37.00*
Mixed Borings, Turnings	*37.00*
Low Phos. Punchings and Plate, elec. fur. grade	50.00
Low Phos. P.ate, 5 ft & Under	50.00
Elec. Furnace Bundles	46.00
Heavy Turnings	39.00
No. 1 Chemical Borings	42.00
Knuckles and couplers	53.00-54.00
Steel car wheels	53.00-54.00

Cast Iron Grades

No. 1 Cupola Cast	52.00-53.00
No. 1 Machinery Cast	58.00
No. 1 Yard Cast	49.00-50.00
Charging Box Cast	52.00-53.00
Heavy Breakable Cast	*52.00*
No. 1 Wheels	64.00*
Malleable	65.00-67.00

* Nominal

CINCINNATI

No. 1 Heavy Melt. Steel	$43.50
No. 2 Heavy Melt. Steel	40.50
No. 1 Busheling	43.50
No. 1 Bundles	43.50
No. 1 Black Bundles	40.50
No. 3 Bundles	30.00
Machine Shop Turnings	30.00
Short Shovel Turnings	32.00
Mixed Borings, Turnings	31.00
Cast Iron Borings	32.00

Cast Iron Grades

No. 1 Cupola Cast	*70.00*
Charging Box Cast	*57.50*
Stove Plate	*54.00*
Heavy Breakable Cast	*55.00*
Unstripped Motor Blocks	40.00
Brake Shoes	*36.00*
Clean Auto Cast	*70.00*
Drop Broken Cast	*72.50*
Low Phos., 18 in. and under	*62.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*47.00*
R.R. Malleable	*62.00*
Rails, Rerolling	63.00
Rails, Random Lengths	63.00
Rails, 18 in. and under	*72.50*

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	*$38.25-39.00*
No. 1 Bundles	*40.25-46.00*
No. 2 Bundles	*37.25-39.00*
No. 1 Busheling	*40.25-46.00*
Machine Shop Turnings	*32.25-33.00*
Forge Flashings	*40.25-46.00*
Short Shovel Turnings	*34.25-35.00*
Cast Iron Borings	34.00-35.00
Punchings & Plate Scrap	*42.75-47.00*

Cast Iron Grades

No. 1 Cupola Cast	59.00-61.00
Heavy Breakable Cast	48.00-51.50
Clean Auto Cast	62.00-64.00

BUFFALO

No. 1 Heavy Melt. Steel	$41.00-42.00
No. 2 Heavy Melt. Steel	38.00-38.50
No. 1 Busheling	38.00-38.50
No. 1 Bundles	39.50-40.00
No. 2 Bundles	36.00-36.50
Machine Shop Turnings	31.50-32.50
Mixed Borings, Turnings	35.00-36.00
Cast Iron Borings	35.00-36.00
Short Shovelings	35.00-36.00
Low Phos.	47.00-48.00

Cast Iron Grades

No. 1 Cupola	*51.00-52.00*
No. 1 Machinery	*54.00-55.00*
Malleable	*60.00-61.00*

Railroad Scrap

Rails, 2 ft and under	60.00-61.00
Rails, random size	53.00-54.00
Railroad Specialties	53.00-53.50

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$39.00*
No. 2 Heavy Melt. Steel	*37.00*
No. 1 Busheling	*38.00-39.00*
No. 1 Bundles	*39.00*
No. 2 Bundles	*36.00*
Mixed Borings, Turnings	*31.00*
Machine Shop Turnings	*31.00*
Short Shovel Turnings	*33.00*
Punchings & Plate Scrap	*41.50*
Low Phos. Plate, 5 ft & under	*41.50*
Elec. Furnace Bundles	*41.50*

Cast Iron Grades

No. 1 Cupola Cast	43.00-44.00
No. 1 Machinery	45.00-46.00
Charging Box Cast	*42.00-43.00*
Heavy Breakable	*42.00-43.00*
Unstripped Motor Blocks	38.00-39.00

* Nominal

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$32.50-36.00*
No. 2 Heavy Melt. Steel	*33.50-34.00*
No. 1 Bundles	*35.50-36.00*
No. 1 Busheling	*33.50-34.00*
Machine Shop Turnings	*27.50-28.00*
Short Shovel Turnings	*29.50-30.00*
Mixed Borings, Turnings	*28.00-28.50*
Bar Crops and Plate	*44.50-45.00*
Punchings & Plate Scrap	*44.50-45.00*
Chemical Borings	*31.00-32.00*

Cast Iron Grades

No. 1 Cupola Cast	41.00-42.00
Mixed Cast	39.00-40.00
Heavy Breakable Cast	38.50-39.50
Stove Plate	38.00-39.00

CHICAGO

No. 1 Heavy Melt. Steel	*$45.00*
No. 2 Heavy Melt. Steel	*43.00*
No. 1 Bundles	*45.00*
No. 2 Bundles	*42.00*
Machine Shop Turnings	*37.00*
Mixed Borings, Turnings	*37.00*
Short Shovel Turnings	*39.00*
Cast Iron Borings	*37.00*
Low Phos.	52.00-54.00
Elec. Furnace Bundles	*44.00-45.00*
Heavy Turnings	*40.00-41.00*
Cut Structurals	49.00-50.00

Cast Iron Grades

No. 1 Cupola Cast	*61.00-63.00*
Clean Auto Cast	*61.00-63.00*
No. 1 Wheels	57.00-58.00
Stove Plate	*48.00-49.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	46.00-47.00*
Malleable	70.00-72.00
Rails, Rerolling	65.00-66.00
Rails, Random Lengths	59.00-60.00
Rails, 2 ft. and under	66.00-67.00
Rails, 18 in. and under	67.00-68.00
Railroad Specialties	58.00-59.00
Angles, Splice Bars	62.00-63.00

* Brokers' buying price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$39.00-40.00*
No. 2 Heavy Melt. Steel	*35.00-36.00*
No. 1 Busheling	36.00-37.00
No. 2 Bundles	*34.00*
Machine Shop Turnings	*31.00-32.00*
Mixed Borings, Turnings	28.00
Short Shovel Turnings	34.00
Cast Iron Borings	28.00
Bar Crops and Plate	*46.00-47.00*
Cut Structurals	*46.00-47.00*

Cast Iron Grades

No. 1 Cupola Cast	*59.00-60.00*
Stove Plate	*59.00-60.00*
No. 1 Wheels	nominal

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.00-44.00*
R.R. Malleable	nominal
Rails, Rerolling	*60.00-61.00*
Rails, 2 ft and under	*65.00-66.00*
Angles and Splice Bars	*59.00-60.00*

ST. LOUIS

No. 1 Heavy Melt. Steel	*$45.00-47.00*
No. 2 Heavy Melt. Steel	*41.00-42.00*
No. 1 Bundles	41.00-42.00
No. 2 Bundles	*39.00-40.00*
Machine Shop Turnings	*31.00-32.00*
Short Shovel Turnings	*33.00-34.00*

Cast Iron Grades

No. 1 Cupola Cast	60.00-62.00
Charging Box Cast	51.00-53.00
Heavy Breakable Cast	*56.00-58.00*
Brake Shoes	48.00-50.00
Clean Auto Cast	*64.00-65.00*
Burnt Cast	47.00-49.00

Railroad Scrap

R.R. Malleable	64.00-66.00
Rails, Rerolling	*65.00-67.00*
Rails, Random Lengths	58.00-60.00
Rails, 2 ft and under	63.00-64.00
Uncut Tires	*55.00-57.00*
Angles, Splice Bars	61.00-63.00
Railroad Specialties	*57.00-59.00*

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$30.00*
No. 2 Heavy Melt. Steel	*28.00*
No. 1 Bundles	*30.00*
No. 2 Bundles	*28.00*
No. 3 Bundles	*25.00*
Machine Shop Turnings	*16.00*
Low phos. electric	*45.00*

Cast Iron Grades

No. 1 Cupola Cast	*46.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*30.00*
Rails, Random Lengths	*30.00*

SEATTLE

No. 1 Heavy Melt. Steel	$28.00
No. 2 Heavy Melt. Steel	28.00
No. 1 Busheling	25.50-26.00
Nos. 1 & 2 Bundles	25.50-26.00
No. 3 Bundles	22.00
Machine Shop Turnings	20.00
Mixed Borings, Turnings	20.00
Punchings & Plate Scrap	*37.50-40.00*
Cut Structurals	*37.50-40.00*

Cast Iron Grades

No. 1 Cupola Cast	*40.00-42.00*
Heavy Breakable Cast	*36.00*
Stove Plate	35.00
Unstripped Motor Blocks	33.00-35.00
Malleable	33.00-35.00
Brake Shoes	35.00
Clean Auto Cast	40.00
No. 1 Wheels	40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	29.00
Railroad Malleable	35.00
Rails, Random Lengths	29.00-30.00
Angles and Splice Bars	29.00-30.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	*$30.00*
No. 2 Heavy Melt. Steel	*28.00*
No. 1 Bundles	*28.00*
No. 2 Bundles	*26.00*
No. 3 Bundles	*22.50*
Machine Shop Turnings	*16.00*
Punchings & Plate Scrap	*39.00*

Cast Iron Grades

No. 1 Cupola Cast	*43.00-48.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	nominal
Rails, Rerolling	*45.00*

HAMILTON, ONT.

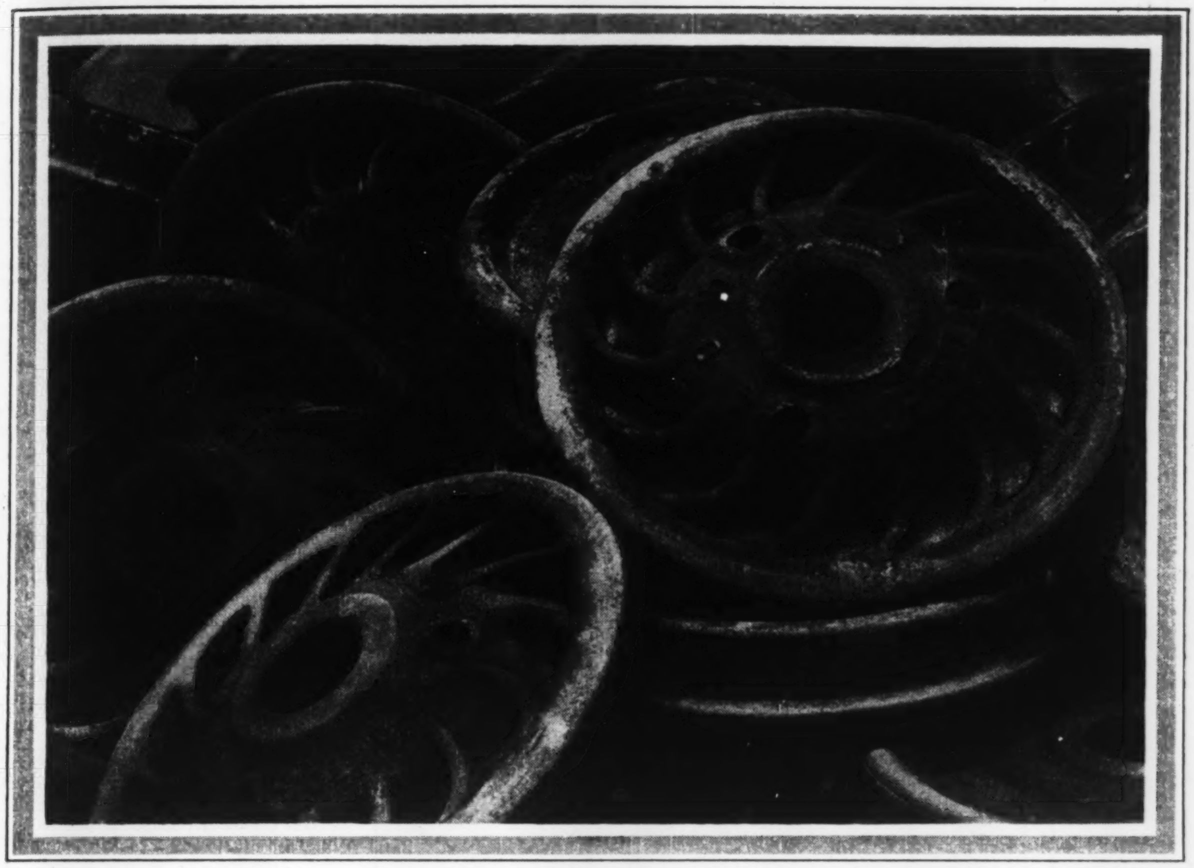
(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades*

No. 1 Machinery Cast.	45.00

* F.o.b. shipping point.



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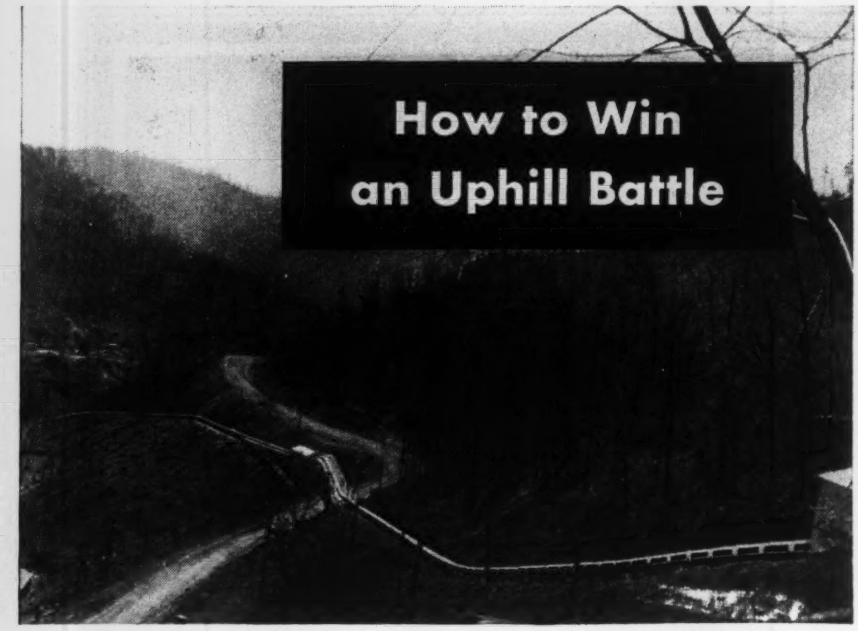

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Sheets, Strip . . .

Sheet and Strip Prices, Page 137 & 138

Cleveland—Price advances of $5 to $10 per ton on the light flat-rolled products, effective Dec. 1, were smaller than the consuming trade had expected. That the higher prices will have no effect in discouraging demand is evident from continued pressure for shipments. Desperate for tonnage, buyers are seeking to fill their needs in the premium markets but are not meeting with much success. Some imported material is being offered for sale in this area, and more buyers are turning to this source of supply. Gray market offerings are limited by the close check on shipments maintained by mills. Steady rise in DO and other emergency-rated orders is indicated throughout first quarter.

Boston—Monthly allotments of hot-rolled strip to nonintegrated cold finishing mills under amended NPA order M-1 are based on tonnage available after rated and essential volume is scheduled What remains is alloted percentagewise based on the first nine months shipments by the supplier, shipments to be in addition to extensions of DO ratings. With rated volume increasing this, in effect, means less steel for cold finishing for non-integrated mills. Confusion in scheduling production of flat-rolled under the current system of distribution is mounting and for February the muddle is expected to be worse than it is for January. Lead time on stainless is 60 and 75 days respectively for hot and cold rolled.

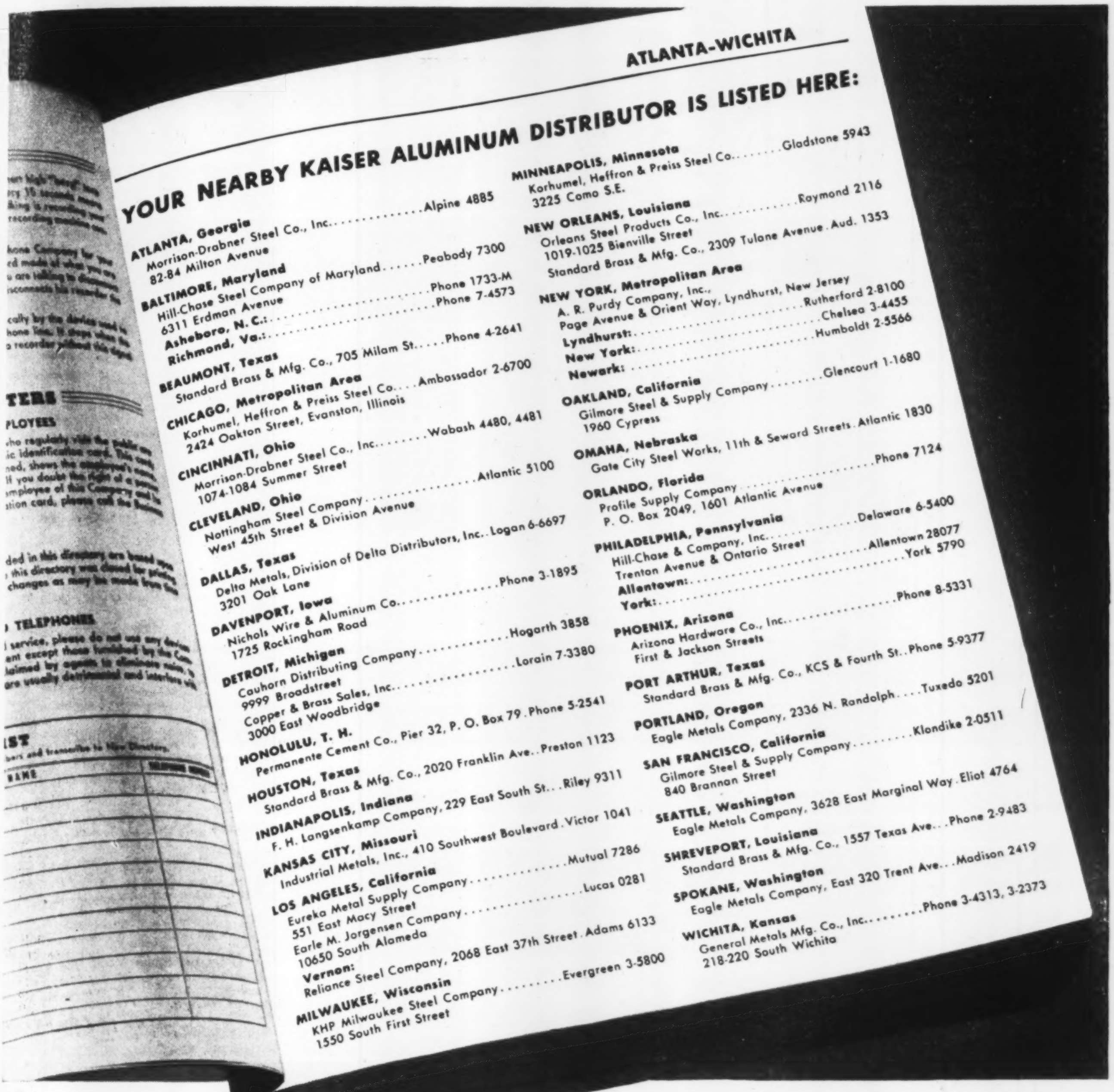
Pittsburgh — Additional upward price moves on sheets and strip were announced by leading producers last week as follows: $8 per ton on culvert sheets and long ternes; $5 on enameling iron; $11 on silicon grades; vert sheets and long ternes; $5 on carbon strip, high strength low alloy hot-rolled strip and cooperage hoop; $10 on cold-rolled high-strength low alloy strip, also on cold-rolled.

The above advances, which are in addition to those previously announced by U. S. Steel subsidiaries, have been followed to date by Jones & Laughlin, Wheeling Steel, Weirton Steel, Allegheny Ludlum, Follansbee and Superior Steel in this district. Sharon and Superior Steel also advanced cold-finished spring steel $10.

Chicago—For virtually all consumers, availability of sheets and strip is more important than price, thus the new higher prices are not expected to affect demand. Manufacturers of consumer goods are pushing for the highest possible production levels next year and are pressing their demands on the mills.

Birmingham — Sheet supplies are tightening due to an increase in government orders, along with increasing needs of regional industries. This leaves nothing whatsoever for expansion of industry locally.

Los Angeles—German 14 gage hot-rolled sheet is offered at $229 per ton delivered here. January scheduling and February delivery is promised. Small amounts of sheet tonnage are available through auctions. Sheet and strip producers are generally sold out through first quarter or farther on rated tonnage.



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Morrison-Drabner Steel Co., Inc........Wabash 4480, 4481
1074-1084 Summer Street

CLEVELAND, Ohio
Nottingham Steel Company................Atlantic 5100
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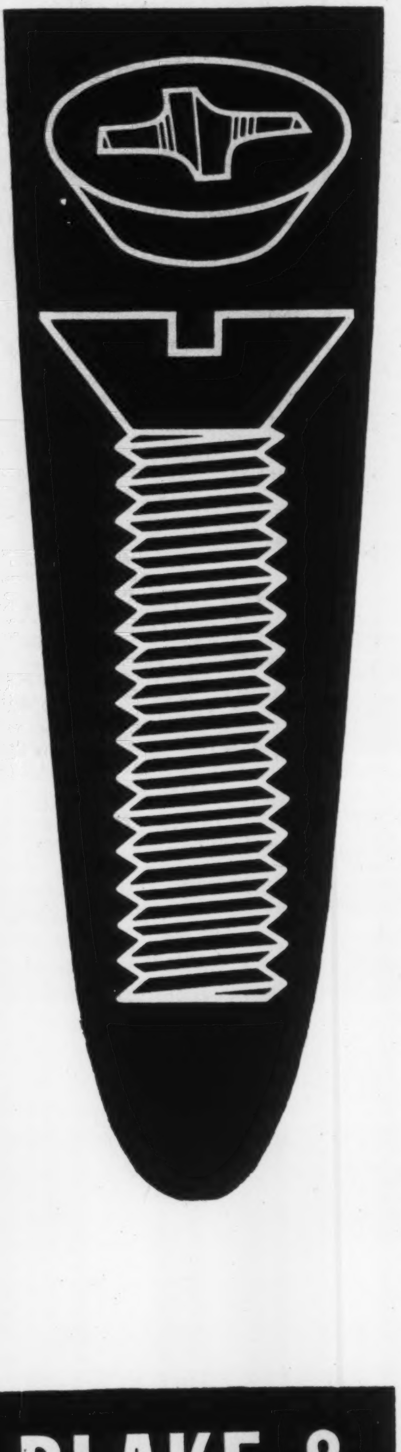

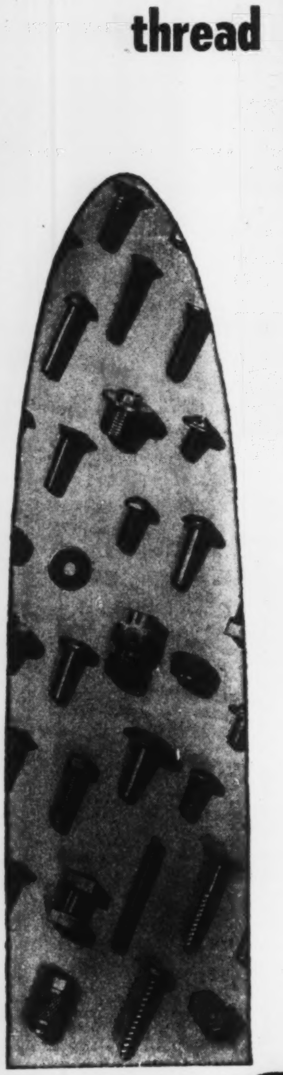

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Steel Export Prices Advance

New York — United States Steel Export Co. advanced export base price, effective with shipments made on and after Dec. 1. Prices in the new schedule include freight to New York, Philadelphia or Baltimore.

CARBON STEELS		
	Per Net Ton	
Billets, Blooms, Slabs:		
Rerolling	$64.71	
Forging	74.71	
Tube Rounds	90.71	
Rails, Standard (61 lb & over)	85.65	
Rails, Light (60 lb & under)	91.36	
	Per 100 lb	
Structural Shapes, Standard	$ 4.17	
C. B. Sections & Bearing Piles	4.17	
Plates, Plain	4.22	
Plates, Floor	5.27	
Bars, Hot-rolled	4.24	
Bars, Reinforcing	4.24	
Steel Sheet Piling	4.97	
Tight Cooperage Hoop	4.19	
Skelp	3.89	
Sheets:		
Hot-Rolled (18 Ga & Heavier)	4.35	
Cold-Rolled	5.10	
Galvanized, Plain	5.65	
Vitrenamel	5.50	
Silicon Sheets:		
Armature	7.52	
Electrical (cut lengths, 22 Ga base)	8.02	
Motor	9.02	
Dynamo	9.82	
Transformer 136	10.12	
Transformer 127	10.37	
Transformer 115	10.92	
Transformer 103	11.62	
Transformer 98	12.12	
Transformer 93	12.42	
Strip, Hot-Rolled	4.04	
Joint Bars for standard rails	5.82	
Tie Plates	5.82	
	Per Base Box	
Tin Plate 107 lb, Superdraw:		
American Common Coke (1.25 lb coating)	$9.84	
Ferrostan No. 25 (0.25 lb coating, electrolytic)	8.51	
Mfg. Terne Plate, Special Coated	8.85	
Black Plate, Superdraw	7.63	
WIRE PRODUCTS		
	Per 100 lb	
Wire Rods	$4.54	
Strip, Cold-Rolled (0.25 lb C and under)	5.21	
Bars, Cold-Finished	5.11	
Bright Nail Wire	5.37	
Black Annealed Wire	5.97	
Galvanized Plain Wire	6.42	
Per 80 Rod Spool		
Barbed Wire:		
Lyman 4 pt, 5 in.	$6.51	
	Per 100 lb	
Glidden, 4 pt, 3 in. or 6 in.	$7.58	
Iowa 4 pt, 3 in. or 6 in.	7.58	
Waukegan 4 pt, 3 in. or 6 in.	7.58	
Nails & Staples, Bright	6.48	
	Per Cent Dis off List	
American Standard Pipe, T & C:		
Buttweld, 2½ in. and 3 in.		
Black	37.9	
Galvanized	18.4	
Seamless:		
In.	Blk.	Galv.
2	23.9	3.9
2½ & 3	26.9	6.9
3½ & 4	28.9	8.9
5 & 6	31.4	11.4
British Gas Tubes, T & C:		
Buttweld, 2½ in. x 3 in.	36.8	20.3
ALLOY STEELS		
	Per Net Ton	
Billets, Blooms & Slabs	$78.71	
	Per 100 lb	
Bars, Hot-Rolled	$4.82	
Bar Shapes, Hot-Rolled	5.07	
Plates	5.27	
Structural Shapes, Standard	4.87	
Strip, Hot-Rolled	6.04	
Bars, Cold-Finished	6.01	
HIGH-STRENGTH STEELS		
Corten		
	Per 100 lb	
Plates	$6.17	
Structural Shapes, Standard	6.02	
C. B. Sections	5.97	
Sheets, Hot-Rolled	6.15	
Sheets, Cold-Rolled	7.25	
Bars & Bar Shapes, H. R.	6.07	
Manten		
Plates	5.37	
Bars, Hot-Rolled	5.37	
Sheets, Hot-Rolled	5.50	

These prices are net cash, subject to adjustment to seller's prices in effect at time of shipment from the mill and also subject to seller's current list of extras and deductions.

Seller's list of extras and deductions applying to tin mill products have been revised, effective as of the same time as the above price changes.

Steel Bars . . .

Bar Prices, Page 137

Philadelphia—Eastern producers have raised prices on bars and various changes in extras also are being made. Cumberland Steel Co., Cumberland, Md., resumed operations last week after a 4-month suspension due to a labor dispute.

Pittsburgh—Carbon and cold-finished bar prices have been advanced $8 per ton by leading interests, and alloy cold-finished $10 to $11. Wyckoff Steel is now quoting cold-finished carbon bars at $5 per 100 pounds, Newark, N. J., and $5.10, Putnam, Conn.

Producers have advanced chemistry extras up to $9 per ton applicable only to resulphurized grades; increased quantity extras $5 per ton in the weight bracket under 2000 pounds; advanced magnetic testing extras up to $5 per ton; increased cutting to length extras in specified length brackets 12-in. to less than 30 ft, 10 to 35 cents per 100 pounds for rounds, hexagons, squares and flats. Not all intermediate specified length brackets are affected. Consideration also is being given to revising size extras applicable on rounds and hexagons.

A. M. Byers Co. and Lockhart Iron & Steel Co. have advanced single refined wrought iron bars $10 per ton to $9.60 per 100 pounds, mill. A. M. Byers now quotes $11.90 per 100 pounds on double refined bars and $12.20 on staybolt. Lockhart quotes $13 and $14.50 respectively, for its hand puddled double refined bars and staybolt products.

Boston—Bar production and distribution is complicated by uneven loads on individual units. Some are filled for four months, scheduling with limited space for civilian tonnage. This applies to carbon and alloy volume and firm scheduling of unrated tonnage is a problem with revisions frequent. An increasing amount of forge shop orders carry ratings and some work is being farmed out. Cold finished carbon bars are generally $8 per ton higher and some producers are revising chemical extras for resulphurizing upward to $9 per ton.

New York—Higher prices on bars is not discouraging consumers in their efforts to place more tonnage. However, they are meeting with little success, where non-rated tonnage is concerned, as producers are moving cautiously as their quotas of DO rated orders will unquestionably be stepped up as time goes on to meet the defense emergency. Hot carbon bars at Johnstown, Pa. have been advanced $5 a ton to 3.70c per pound, thus making for a minimum delivered price here of $4.24 on carlots of 40,000 pounds. Cold drawn carbon bars also are being advanced along with alloy material.

Cleveland—Bar buyers are trying to figure out how hard the new price schedules effected Dec. 1 by producers will hit them. The fact

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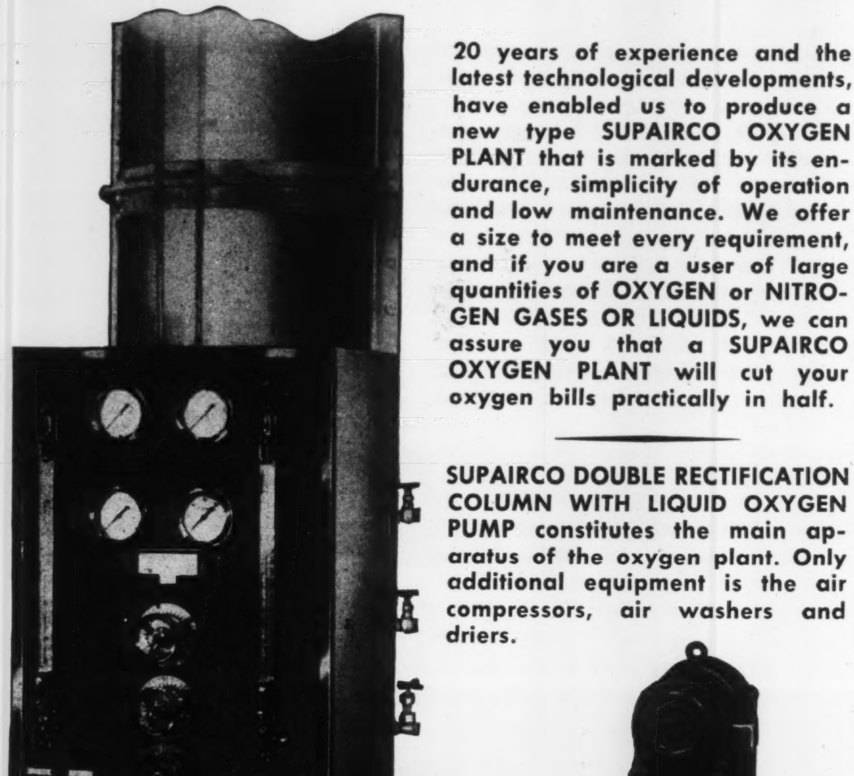

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that not only base prices were increased but also some upward revisions in certain extras were made complicates the problem. Demand far outstrips supply and there is little prospect of any open tonnage being available for the general market in January. Producers are moving cautiously in accepting orders, in fact, at present are restricting bookings beyond January to DO and other emergency rated tonnage.

Chicago—All producers of carbon steel bars have announced price advances. Billet steel grades are up $5 a ton, while rail steel is up $15. Both rail steel merchant bars and reinforcing bars in mill lengths are quoted at 4.75c, Chicago Heights, Ill. Cold finishers advanced carbon bars generally to 4.55c and alloy to 5.40c.

Stainless Steel . . .

Stainless Steel Prices, Page 140

Pittsburgh — Further details of Carnegie-Illinois Steel Corp. and American Steel & Wire Co. upward price action on all types of stainless products were made public last week as follows: Forging and rerolling billets, blooms and slabs $10 per ton; bars and shapes, $25; plates and hot-rolled strip, $20; cold-rolled strip and sheets, $40; round wire, $25; and flat wire, $40. By weekened most other stainless producers had adopted similar price schedules.

Plates . . .

Plate Prices, Page 137

Boston—In effect plate volume is scheduled along two lines of demarcation, rated and essential program tonnage and unrated civilian. The former two are booked through first quarter and are scheduled more or less automatically on lead time while civilian volume takes what is left on a monthly basis. Openings for the latter are shrinking and February allocations will be smaller with scheduling for that month due about Dec. 15. Plate fabricating shops are short of inventory and lack volume shipbuilding sub-contracts on which many depended during the last armament program. Under current plate distribution rather heavy tonnage is going to so-called dislocated areas. Some mills are also booked beyond their 15 percent maximum on rated orders. Spreads in plate prices continue, premiums being maintained over the $4 advance by one leading interest.

New York—Plate sellers generally are advancing prices $4 to $5 a ton and substantially higher in at least one instance. Producers are accepting nothing new in the way of nonrated tonnage, as they have not opened their books beyond January and are more than filled up with commitments through January. They are moving cautiously now that the international situation has become so much more critical and the probability that the maximum limitations on DO rated orders (15 per cent of capacity in the case of plates) will be increased. There are certain exceptions in which some new nonrated tonnage may be had. Some mills are quoting premiums far above the general going market.

Pittsburgh—Carnegie-Illinois Steel Corp. has raised prices on floor plates 20 cents to $4.75 per 100 pounds, base. Sharon Steel is quoting $3.95 on carbon plates, and $5.20 on open hearth alloy plates.

Birmingham—Plate users are moving through every avenue imaginable to get additional tonnage. Not much plate is available other than for regular users and what is being squeezed in by trimming corners.

Wire . . .

Wire Prices, Page 139

Boston — Rated orders for wire specialties are increasing and extending schedules for civilian tonnage. Some producers are booked through first quarter and well into second on specialties with tightening rod supply adding to the difficulty in meeting January deliveries. Pressure for wire specialties, including valve spring material, from the automotive industry is maintained. Lead time on DO rated orders for carbon and alloy rods remains at 45 days, with alloy drawn wire 60 days and stainless drawn wire 75 days. Limitation required for DO rated drawn wire orders remains at 5 per cent for carbon but is 25 per cent for alloys, including stainless.

Pittsburgh—Pittsburgh Steel, Jones & Laughlin, Page Steel & Wire and other producers have followed the pattern established by American Steel & Wire Co. in advancing wire product prices to offset increased wage costs. Product increases not initially announced by American Steel & Wire include $7 per ton on MB spring and cold-rolled flat wire, and $9 per ton on weaving wire not for fly screen cloth.

Tool Steel . . .

Tool Steel Prices, Page 139

Pittsburgh—Crucible Steel Co. of America, Allegheny Ludlum Steel Corp., and other tool steel producers have advanced base prices and extras 10 per cent.

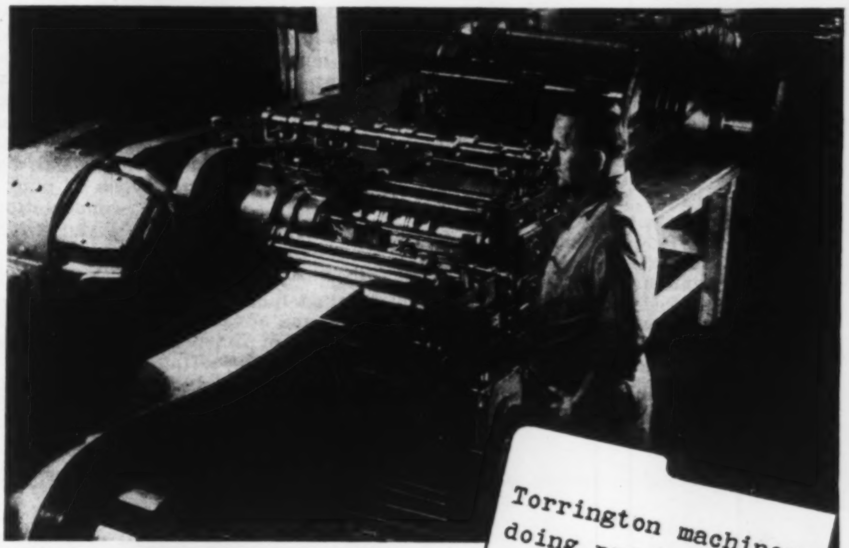
Tubular Goods . . .

Tubular Goods Prices, Page 140

Pittsburgh—National Tube Co. has combined all carbon mechanical and pressure tubing prices into one schedule for cold-drawn tubing, with 20 per cent reduction for hot-rolled and applicable extras and deductions for squares, rounds, rectangles, automotive stock, couplings, etc.

The company has raised tubing prices the following average percentages per product: Carbon mechanical, 6.6; carbon pressure, 8.2; carbon automotive, 7.7; alloy pressure and mechanical, 6; seamless stainless tubing and pipe, 5; and carbon electric weld tubing, 5 per cent.

Jones & Laughlin, Pittsburgh Steel, Spang Chalfant, Wheeling Steel and other members of the industry have adopted price schedules similar to those of National Tube on black and galvanized buttweld and seamless pipe, as well as oil country goods. A. M. Byers Co. advanced wrought iron pipe 8 per cent or $18 per ton.



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Structural Shapes . . .

Structural Shape Prices, Page 137

Boston — Extended deliveries limit volume of bridge work open for completion in 1951. That some states are congnizant of this is indicated by extension of steel completion dates. Maine names June, 1952, for a 920-ton bridge, Aroostook river, Caribou, Me., closed Dec. 6. Bridges under contract for which fabricated steel is yet to be placed approximate 2550 tons. Plain material inventories are low and plans are frequently revised in minor details to meet shop sections available. Placements of school contracts are heavier.

New York — The leading eastern shape producer has advanced prices $5 a ton and a small independent, $14 a ton. The minimum delivered price here is now 3.99c, based on the 29 cent rate from Bethlehem, Pa., on carlots of 40,000 pounds. Increasing shortage of steel along with higher prices on most all construction items is tending to reduce commercial demand; only on some types of public work and industrial construction that will undoubtedly be given emergency preference is inquiry being fully sustained.

Philadelphia—Fabricated steel prices are advancing, reflecting both increases in finished steel prices and wages at fabricating shops. This is causing builders to hesitate on some projects, although much work is still being offered despite extended delivery promises.

Los Angeles—Pressure for structurals, especially 3-6 in. channels, is stronger as fabricators race against time. Despite uncertainties large projects continue. University of California will start construction of a $15,500,000 medical center as planned. Contracts were awarded for construction of a $4,300,000 expansion of Cedars of Lebanon Hospital.

Seattle—Several sizable structural awards are pending, including 3700 tons for Bonneville transmission towers, 500 tons for Bonneville substations, 2000 tons for Alaska military warehouses, and 1000 tons for Eielson air field, Alaska, power house. Fabricators find it increasingly difficult to maintain operations due to material shortages. Coast mills are hard pressed to meet local demands but the bottleneck lies in special items furnished only by eastern producers. Bethlehem's new Seattle fabricating plant is operating at capacity.

Semifinished Steel . . .

Semifinished Prices, Page 137

Pittsburgh—Carbon forging ingots have been advanced $2 to $52 per net ton by Carnegie-Illinois Steel Corp. Crucible Steel Co. of America has followed Carnegie in raising alloy ingots $3 to $54 per ton, and alloy forging billets, blooms and slabs $4 to $70 per net ton.

Pig Iron . . .

Pig Iron Prices, Page 136

Boston—An increase in foundry pig iron prices by Mystic Iron Works for first quarter is likely, but whether or not the advance will match the latest $3 rise by other furnaces supplying subnormal volume to this area depends on costs for September-October under mutual agreements with most district foundries. Production at Everett has been near capacity. Foreign arrivals of basic are supporting inventories of that grade.

New York—Pig iron prices are undergoing a general advance. Delivered prices in this area are up $3 a ton due to an advance by the Bethlehem Pa. producer. Hence No. 2 foundry and malleable are up to $58.78 and $59.29 delivered Brooklyn and basic, No. 2 foundry, malleable and bessemer are up to $56.63, $57.13, $57.63 and $58.13, respectively, delivered Newark, N. J. The advance in the domestic market is also having a stimulating effect on imported iron prices. Meanwhile, pig iron supply is becoming tighter, various foundries buying largely on a hand-to-mouth basis in an effort to maintain operations. At the same time they are having to augment purchases of scrap and ferroalloys.

Buffalo — The rush for merchant pig iron continued despite a $3 boost in prices. Price was secondary to finding supply sources. Demand is still primarily from civilian sources.

Pittsburgh—The Neville Island and Sharpsville, Pa. blast furnace interests raised all merchant pig iron grades produced $3 per ton, effective Dec. 1. Similar price action was followed by U. S. Steel subsidiaries on

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December 1, 1950

Dec. 5. Carnegie-Illinois Steel advanced standard ferromanganese $13 per gross ton to $188, Etna, Pa. Tennessee Products & Chemical Co. raised charcoal pig iron $4 per ton to $66, Lyles, Tenn., furnace, effective Dec. 2.

Cleveland—Pig iron supply conditions continue to worsen with foundry demand stronger than at any time since end of World War II. Merchant sellers are distributing available tonnage among customers as equitably as possible, being unable to take on additional tonnage. The latest increase of $3 per ton on all grades of iron is not expected to have any dampening effect on demand. The increase followed quickly upon announcement of a hike of 60 cents per ton in the price of iron ore for the 1951 lake shipping season. One blast furnace in this immediate district is down for repairs. The remainder are operating at capacity having fully recovered from the snowstorm which forced a sharp curtailment immediately after Thanksgiving Day.

Chicago—The $3 advance in pig iron was general in this district, by last midweek, all producers following the lead of Carnegie-Illinois. This brings the increase in the past two months to $6, all makers having raised $3 a ton in late September or early October. Higher prices are not expected to lessen demand for foundry iron which is in excess of supply and continues under allocation by suppliers. The new price lessens the disparity between iron and scrap. During the past week two blast furnaces have gone down for relining, leaving 39 of 42 operating. These are No. 6 of Carnegie-Illinois at south works and B of Inland Steel Co.

Birmingham—Pig iron production, while sustained at capacity except for one Republic furnace which continues down because of a lack of coke, is still far from sufficient to take care of needs. Merchant iron melters are declining requests daily for additional tonnage.

Seattle—Foreign pig iron is arriving here in sizable shipments from Europe. Consignments are reported enroute from South Africa.

Scrap Formula Revised

New York—Under pressure of higher finished steel prices and mounting demand, the steel mills have revised their formula for pricing scrap. The formula was established several months ago in an effort to stabilize this volatile market and at the same time ward off possible freezing of scrap prices by the government.

The latest revision, made at least in part to compensate scrap producers for the higher prices they now must pay for finished steel, ups steelmaking grades of scrap $2.50 to $10 per ton, and increases the number of points at which prices are based from less than 10 to around 40.

Full import of the changes remains to be assessed. However, under the new setup brokers' commissions are reduced from $1 to 75 cents per ton, and prices are increased more at some points than at others. Also the spreads between various steelmaking grades are narrowed to some extent. Producers will allow a $3.50 to $4 springboard for bringing in scrap from remote areas.

Prices on No. 1 heavy melting steel, effective Dec. 6, are:

Massillon, O.	$46.50
Midand, Pa.	$46.50
Middletown, O.	$46.00
Phoenixville, Pa.	$45.00
Portmouth, O.	$46.00
Sparrows Point, Md.	$45.00
St. Louis	$44.50
Steubenville, O.	$46.50
Struthers, O.	$46.50
Warren, O.	$46.50
Weirton, W. Wa.	$46.50
Youngstown	$46.50
Pittsburgh	$46.50
Chicago	$45.00
Bethlehem, Pa.	$45.00
Ashland, Ky.	$46.00
Atlanta	$43.00
Buffalo	$45.25
Butler, Pa.	$46.50
Canton, O.	$46.50
Cincinnati	$46.00
Claymont, Del.	$45.00
Cleveland	$46.00
Coatesville, Pa.	$45.00
Conshohocken, Pa.	$45.00
Duluth	$44.75
Farrell, Pa.	$46.50
Gadsden, Ala.	$43.50
Birmingham	$43.50
Harrisburg	$45.00
Houston	$40.50
Johnstown	$46.50
Kansas City	$43.00
Kokomo	$45.50
Memphis	**

** No price yet established

In New England f.o.b. selling prices have been established at $36.42 based on eastern Pennsylvania point. Brooklyn, N. Y., and New York city prices are $39.84. New Jersey is $41.31. In-

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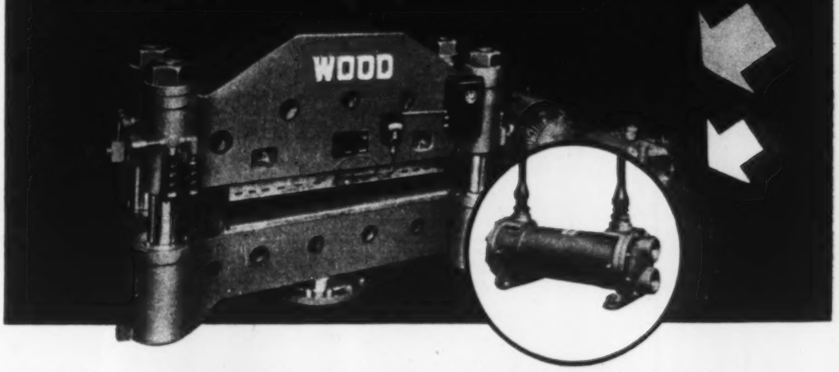

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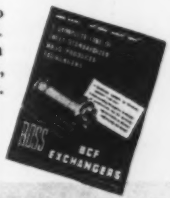

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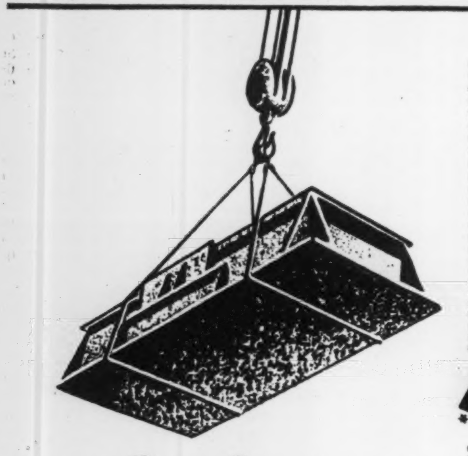

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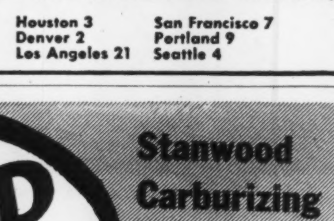

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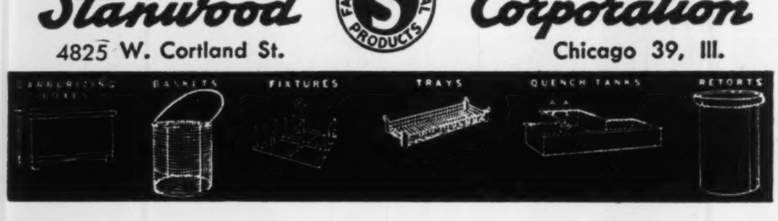

dustrial scrap at Detroit is $42.

Differentials for other grades are: No. 2 heavy melting, minus $2; No. 2 bundles, minus $3; unprepared heavy melting, minus $4; short shovel turnings, minus $6; borings, minus $6; machine shop turnings, minus $8; borings and machine shop turnings (mixed), minus $8; low phos, plus $2. No. 1 bundles and railroad heavy melting steel are at the same level as No. 1 heavy melting steel.

A $1 switching charge is set up for all cities except Chicago where the charge is $1.50.

Scrap . . .

Scrap Prices, Page 144

Boston—Increase in steelmaking scrap of $2.50 to $4.50 ton, latter in the case of No. 2 bundles to $32.50 shipping point, came at a time the old formula price structure was cracking and under pressure. New quotations are more in line with normal differentials between grades, including heavy melting and bundles. Reflecting stronger prices for steel scrap and pig iron, cast grades are firmer. Peak in heavy melting scrap prices this year was reached in June at $37 shipping point for No. 1.

New York—Scrap brokers have advanced buying prices to meet new formula levels. They are offering to pay $39 for No. 1 heavy melting steel and No. 1 bundles, $37 for No. 2 heavy melting, and $36 for No. 2 bundles. There is some question about No. 1 busheling, with some offering $38 and others $39.

Philadelphia—New formula prices have been established on leading grades of steel scrap representing advances of $6 to $10 per ton. Confusion exists as to the ramifications of the formula change, including the influence on other grades not affected.

One feature is the narrowing of differentials between the major open hearth grades. This is reflected particularly in the differential between No. 2 bundles and No. 1 heavy melting steel and No. 1 bundles, which is now only $3 per ton as against $7.

Under the new schedules No. 1 heavy melting steel and No. 1 bundles are now $45 delivered, No. 2 heavy melting and No. 1 busheling $43 and No. 2 bundles $42.

The advance of $6 on No. 1 heavy melting here compares with an advance of $2.50 at Pittsburgh. Some trade interests see in this the possibility of less raiding by consumers from outside the district and also the probability of a better flow of scrap here from New England and the South.

Buffalo—New business was reported in cast scrap at price advances of $1 to $2 a ton. One of the leading buyers in the area purchased a light tonnage of cupola at $51-52 a ton. The sale indicated additional strength when it was reported the buyer could only obtain limited tonnage at the higher figure. No. 1 machinery cast was changing hands at $54-55 a ton. The top mill consumer reiterated the formula price would be adhered to in steelmaking items at this time. However, sales above the formula were still cited to smaller consumers.

Detroit—Pressure under the scrap market forced a revision in the so-called formula prices and automotive lists have moved at the pegged level.

The new prices reduce much of the spread between "free" scrap and that on allocation and the new structure has taken some of the upward drive out of the freemarket price. The new basis established No. 2 bundles at $1 under the No. 2 heavy melting price. Major grades are now quoted at $38.25-$39 for No. 2 heavy melting, $40.25-$46 No. 1 bundles, $37.25-$39 No. 2 bundles, $40.25-$46 No. 1 busheling and forge flashings, $32.25-$33 machine shop turnings, short shovelings $34.25-$35, and $42.75-$47 for punchings and plate scrap. Cast iron has stabilized.

Cleveland—Under the new pricing formula, steelmaking and blast furnace scrap prices advanced here last week. No. 1 heavy melting is $2.50 a ton higher at $45.50 to $46, plus applicable springboards.

Chicago—Steel mill buying prices for open hearth grades were increased $5 to $7 a ton when two leading consumers made new purchases. For No. 1 heavy melting and No. 1 bundles $45 was paid with No. 2 heavy melting $43, No. 2 bundles $42 and short shoveling turnings $39.

Foundry scrap continues to edge up under heavy demand and railroad material holds its strength handily.

Los Angeles—Limited movement of scrap caused mills to advance scrap offering prices $1.50 to $5.50. Market is strong and prices unstable. Mills are still unable to get enough scrap and purchases are being made at higher than quoted prices.

Pittsburgh — New formula prices have been established on key grades in Pittsburgh and some forty other basing point centers. Price for No. 1 heavy melting, No. 1 busheling, and railroad heavy melting grades has been advanced $2.50 per ton to $46.50. Arbitrary switching charge of $1 has been established at all basing points except Chicago which is $1.50.

Seattle—Scrap buyers report domestic sources drying up. The supply situation has been eased temporarily by imports from the Aleutians and Europe. Sales of No. 1 melting have been made at $30 while electric furnace material has been bought at $40. Foundries have raised prices paid truckers from $35-$36 to $40 for No. 1 cupola which is quoted $40-$42.

Iron Ore . . .

Iron Ore Prices, Page 141

Cleveland—Substantial tonnages of Lake Superior iron ore have been sold for 1951 shipment at 60 cents per ton above prices prevailing in the 1950 shipping season. Cleveland-Cliffs Iron Co. and Pickands, Mather & Co. announced sales had been completed, some of the tonnage for immediate delivery at upper lake ports, some already shipped all-rail from the mines, and some for next season's delivery.

New prices are: Mesaba range nonbessemer, $8.30; Mesaba range bessemer, $8.45; Old range nonbessemer, $8.55; Old range bessemer, $8.70; high phosphorus, $8.30. Increases or decreases, if any, after Dec. 2, 1950, in lake vessel rates, in upper lake rail freights, dock handling charges and taxes are for buyer's account.

Ore sellers point out that the 60 cents per ton increase still leaves the rise in iron ore prices since 1939

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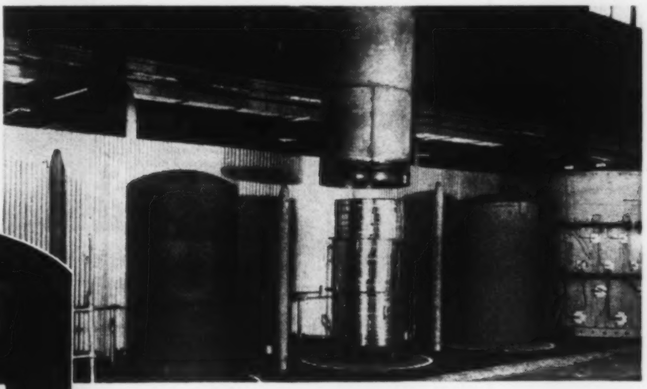

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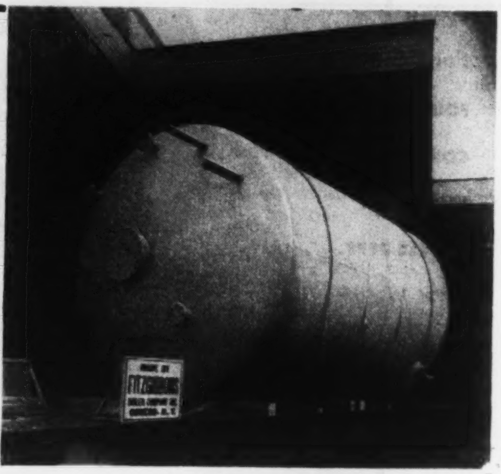

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AMERICAN-FORT PITT SPRINGS

much less than that on other products. For example, in that period, including the present rise, iron ore prices have advanced less than 68 per cent whereas coal has gone up 101.8 per cent, wholesale commodity prices 121.9 per cent, copper 123.3 per cent, pig iron 134.5 per cent and scrap 148.6 per cent.

Cleveland—Shipments of Lake Superior iron ore declined to 6,993,233 tons in November, drop of 4,387,073 tons from October, but an increase of 5,890,066 tons from November, 1949, reports the Lake Superior Iron Ore Association. This brought the total for the season through November to 77,333,078 tons, increase of 7,947,529 tons, or 11.45 per cent, over total for the like 1949 period.

Of the total brought down this year, 75,416,539 tons originated at United States docks and 1,916,539 tons at Canadian docks. The Port Arthur and Ashland docks are closed for the season, having shipped 1,215,159 tons and 4,889,937 tons, respectively. The comparative totals for the 1949 season were 1,131,977 tons and 4,263,314 tons.

Rails, Cars . . .

Track Material Prices, Page 139

Birmingham — Central of Georgia Railway has placed an order with the district's Pullman-Standard Car Mfg. Co. shop for 300 box cars and 200 gondolas. From the Gulf, Mobile & Ohio, the district has received an order for 300 gondolas. All are for delivery late in 1951. Together, they are valued at more than $4 million.

Warehouse . . .

Warehouse Prices, Page 141

Philadelphia—Local district warehouses are adjusting prices upward to compensate for increases in steel costs and wages.

Cleveland — Local warehouses are raising prices $8 to $16 per ton to offset the rise in mill prices and anticipated wage increases. Under the new schedule hot-rolled sheets, cold-rolled sheets, hot-rolled strip, hot-rolled bars and standard structurals are up $9 per ton. Galvanized No. 10 gage sheets are up $16, cold-rolled strip $15, cold-finished bars $13, hot-rolled alloy bars $11, carbon and floor plates $8.

Distributors are under heavy pressure from consumers but with stocks continuing to shrink and mill shipments slow, the warehouses are forced to turn away considerable business.

Cincinnati — District warehouses are raising prices in accord with mill boosts, formal announcements of the new schedules now being under preparation. Supplies are tight as stocks dwindle. Demand for building steel recedes seasonally.

Los Angeles—Prices on warehouse products are up $9 to $13 per ton. Hot-rolled sheet advanced 50 cents to $6.35 per 100 lb and hot-rolled strip is up 60 cents to $6.40 per 100 lb. Prices on galvanized sheets are up 65 cents and structural shapes 45 cents. Lack of supplies allows warehouses to satisfy only 10 per cent of plate demand of their customers.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 140

Cleveland—Following quickly upon increases in steel prices, bolt, nut and rivet prices have been adjusted upward by reductions in published discount lists. Fastener makers had been holding off on advances for some weeks pending announcement of steel price policy. The increase on fasteners, consequently, comes as to no surprise to consumers. Fasteners makers report continued difficulty in obtaining steel even to meet defense needs. No improvement in this latter respect is expected until fastener and similar suppliers' position in respect to extending certified tonnage from the railroads and other consumers holding emergency ratings is clarified. With such extension not specifically provided for in the allocations regulations manufacturers have been running into trouble in covering required steel tonnage.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

954 tons, St. Joseph Mercy Hospital, Sioux City, Iowa, to Gate City Steel Works Inc., Omaha, Nebr.

625 tons, power plant addition, Dow Chemical Co., Belasco, Tex., to Mosher Steel Co., Houston, Tex.; Stone & Webster Engineering Corp., Boston, engineer-contractor.

580 tons, power plant addition, North American Rayon Corp., Elizabethtown, Tenn., to Bristol Iron & Steel Works, Bristol, Va.; Stone & Webster Engineering Corp., Boston, engineer-contractor.

385 tons three-span continuous WF beam bridge, Berkshire, Vt., to Vermont Structural Steel Corp., Burlington, Vt.; Oscar L. Olsen, Montpelier, general contractor.

360 tons, state bridge, Cumberland county, Pennsylvania, to Bethlehem Steel Co.

300 tons, building, McIlvain Lumber Co., Philadelphia, to Easton Steel Structurals, Easton, Pa.

180 tons, building No. 14, R-Way Furniture Co., Sheboygan, Wis., to Wisconsin Bridge & Iron Co., Milwaukee.

140 tons, state bridge, Northumberland county, Pennsylvania, to American Bridge Co., Pittsburgh.

135 tons, Bridge SN-1222, Marshall county, Iowa, to Pittsburgh-DesMoines Steel Co., Des Moines, Iowa.

100 tons, miscellaneous items Washington state bridge, and other projects, to Standard Steel Fabricating Co., Seattle.

STRUCTURAL STEEL PENDING

18,000 tons, John E. Mathews bridge superstructure, St. Johns river, Jacksonville, Fla., Bethlehem Steel Co., low.

1400 tons, state bridge, Allegheny county, Pennsylvania; bids Dec. 28.

870 tons, state bridge, Berks county, Pennsylvania; bids 28.

575 tons, substation structures; bids to Bonneville Power Administration, Portland, Oreg., Dec. 21.

500 tons, 23rd street viaduct, Chicago, for Chicago Park Board; bids Dec. 8.

400 tons, Y.M.C.A. Bldg., Harvey, Ill.; bids Dec. 1.

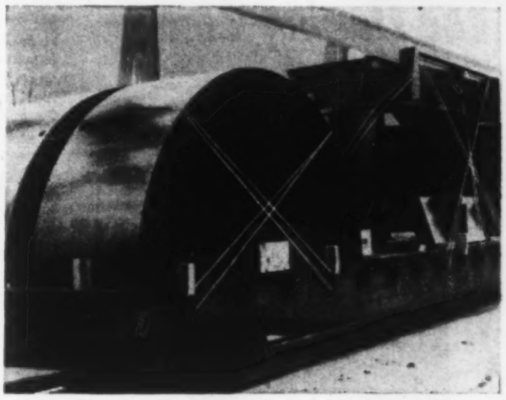
350 tons, 173-foot, three-span continuous rolled beam bridge, Darien, Conn., Route 1 over New York, New Haven & Hartford tracks; bids Dec. 18, Hartford, Conn.

250 tons, Sears, Roebuck & Co., Vineland, N. J.; bids Dec. 13.

170 tons, state bridge, Indiana county, Pennsylvania; bids Dec. 27.

108 tons, state bridge, Beaver county, Pennsylvania; bids Dec. 28.

100 tons, including reinforcing, Washington state bridge, Ferry county; Hunt & Willett Inc., Brewster, low $78,013.



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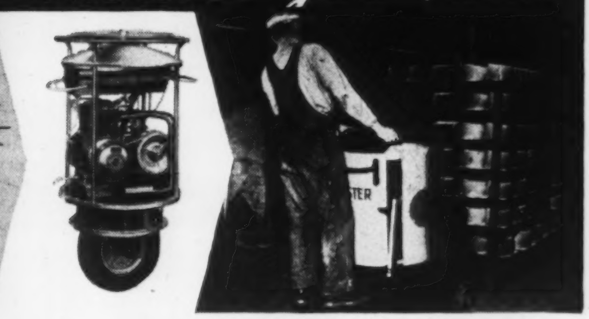

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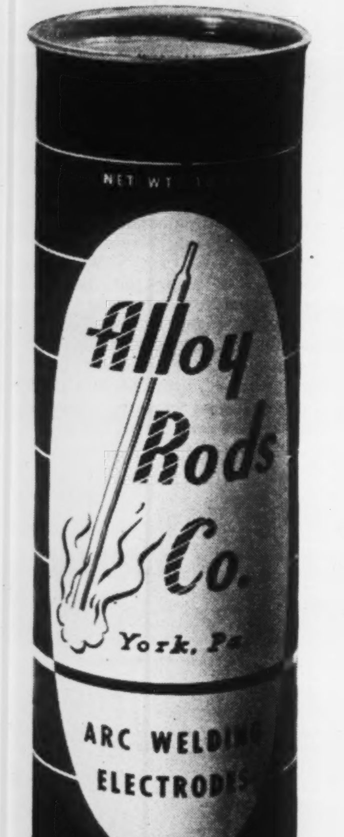

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Unstated, 200-foot I beam, Lowe river, and 150-foot I beam, Indian river, Alaska, bridges; bids to Alaska Road Commission, Juneau, Dec. 20.

Unstated, military construction, Richland, Wash. area; Waale-Camplan Co., Portland, Oreg., low, $178,872.

Unstated, grading and bridge construction project, Anchorage-Seward, Alaska, highway; Manson Construction Co. and Osberg Construction Co., Seattle, joint low bid $1,054,413.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1600 tons, Frigidaire Division, General Motors Corp., Dayton, O., to United States Steel Supply Co., Chicago.

535 tons, expansion, Hall Printing Co., Chicago, to Joseph T. Ryerson & Son Inc., Chicago; John Griffiths & Son Construction Co., Chicago, contractor.

157 tons, high school, Palatine, Ill., to Ceco Steel Products Corp., Cicero, Ill.; John Traff, Chicago, contractor.

152 tons, building, Mrs. Snyder's Home Made Candies, Chicago, to Bethlehem Steel Co.; Federal Construction Co., Chicago, contractor.

120 tons, expansion, Linde Air Products Co., East Chicago, Ind., to United States Steel Supply Co., Chicago; F. H. McGraw & Co., Chicago, contractor.

110 tons, Trinity Lutheran Church, St. Joseph, Mich., to Ceco Steel Products Corp., Cicero, Ill.; John Traff, Chicago, contractor.

REINFORCING BARS PENDING

1600 tons, including shapes and plates, Greater Vancouver water district Capilano dam project; materials to be purchased shortly by Chief Commissioner A. E. Cleveland, Vancouver, B. C.

1000 tons, American Gas & Electric Co., Beverly, O.

500 tons, second unit Seattle viaduct; bids to state Highway Commission, Olympia, Wash., Jan. 9.

280 tons, two Washington state girder bridges, Lewis county; Erick Enquist, Troutdale, low $53,096.

208 tons, addition, Jewel Tea Co., Barrington, Ill.; A. L. Jackson Co., low on general contract.

200 tons, building, Continental Products Co., Chicago.

175 tons, Oakview school, Dayton, O.

167 tons, St. Vincent's Church, Oak Park, Ill.

161 tons, Y.M.C.A. Bldg., Harvey, Ill.; bids Dec. 4.

150 tons, state bridge, Darien, Conn., over New Haven & Hartford tracks; bids Dec. 18, Hartford, Conn.; also 70 tons steel piles.

105 tons, bar joists, high school, Bismarck, N. Dak.

100 tons, including steel piling, Washington state girder bridge, Cowlitz county; general award to N. Fiorito Co., Seattle, low $86,471.

100 tons, agriculture building, South Dakota State College of Agriculture and Mechanical Arts, Brookings, S. Dak.

100 tons, student union building, Macalester College, St. Paul.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Louisville & Nashville, 62 diesel-electric locomotive units, to Electro-Motive Div., General Motors Corp., La Grange, Ill.

Seven foreign railroads, 40 diesel-electric units, to American Locomotive-General Electric Companies, Schenectady, N. Y.; orders include twelve 1600-hp freight units for Consolidated of Cuba, five 1600-hp road switching units for Portuguese Railway, five 1600-hp road-switching units for Algerian Railways, three 1600-hp road-switching units for Central of Uruguay, two 1600-hp road units for Central of Mexico, and one 1000-hp switching unit for Altos Hornos de Mexico.

Southern, 100 diesel-electric locomotive units, to American Locomotive-General Electric Companies, Schenectady, N. Y., Electro-Motive Division, General Motors Corp., La Grange, Ill., and Fairbanks, Morse & Co., Chicago.

RAILROAD CARS PLACED

Central of Georgia, 300 box cars and 200 gondolas, to Pullman-Standard Car Mfg. Co.'s Birmingham shop.

New York, New Haven & Hartford, 200 flat cars, to own shops.

Union Tank Car Co., 1000 fifty-ton tank cars, to American Car & Foundry Co., New York.

RAILROAD CARS PENDING

Canadian Pacific, 25 baggage and express cars, funds authorized.

Gulf, Mobile & Ohio, 1400 freight cars, pending; list comprises 700 fifty-ton box cars, 400 seventy-ton ore cars and 300 fifty-ton gondola cars.

FERROALLOYS

(*Continued from page* 141)

Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Low-Carbon Ferrochrome: (Cr 67-72%.) Contract, carload, lump, bulk, max. 0.03% C 33.35c per lb of contained Cr, 0.04% C 31.25c, 0.06% C 30.25c, 0.10% C 29.75c, 0.15% C 29.50c, 0.20% C 29.25c, 0.50% C 29.0c, 1% C 28.75c, 1.50% C 28.60c, 2% C 28.5c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 MxD, bulk, 23.25c per lb of contained Cr, c.l., packed 24.15c, ton 25.50c, less ton 27.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, Carload, packed, 8 MxD, 16.10c per lb of alloy; 1 ton 16.95c; less ton lot, 18.15c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34.41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 21.75c per lb of contained chromium plus 12.00c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon, F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 36-39%, Al 7-9%, C 0.05% max.) 21.75c per lb of contained silicon plus 12.0c per lb of contained silicon plus aluminum, 3" x down, delivered.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.08 per lb of contained chromium, ton lot $1.10, less ton $1.12. Delivered. Spot add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.75 per lb of contained W; 2000 lb W to 10,000 lb W, $2.85; less than 2000 lb W, $2.97. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $3.65 per lb of contained W; less than 1000 lb W, $3.75.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 19.00c per lb of contained Si; packed 20.40c; ton lot 21.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.0c per lb of contained Si, carload packed 13.6c, ton lot 15.05c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered, Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 15.55c per lb of contained Si, carload packed 16.8c, ton lot 17.8c, less ton 18.95c. Delivered. Spot, add 0.25c.

Low-Alumimmm 85% Ferrosilicon: (Al 0.60% max.) Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.5c per lb of contained Si, carload packed 18.7c, ton lot 19.65c, less ton 20.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.) Add 0.7c to 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 20.0c per lb of Si, c.l. packed 21.2c, ton lot 22.1c, less ton 23.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe.) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.65c per lb of alloy, ton lots packed 10.05c, 200 to 1999 lb 10.40c, smaller lots 10.90c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3⅜ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton lot 16.0c, less ton 16.9c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.95c per lb of briquet, c.l. packaged 11.75c, ton lot 12.55c, less ton 13.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.85c, per lb of briquet, c.l. packaged 11.65c, ton lot 12.45c, less ton 13.35c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si) Contract, carload, bulk 6.75c per lb of briquet, c.l. packed 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—weighing approx 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c, c.l. packed 7.7c, ton lot 8.5c, less ton 9.40c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 21.0c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.). Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $3.00 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3.10. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.20.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, delivered; less ton lots $3.80.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8 11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24%, P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth, $1.32; Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth $1.14, packed in bags containing 20 lb of molybdenum; Washington, Pa., 95.00c.

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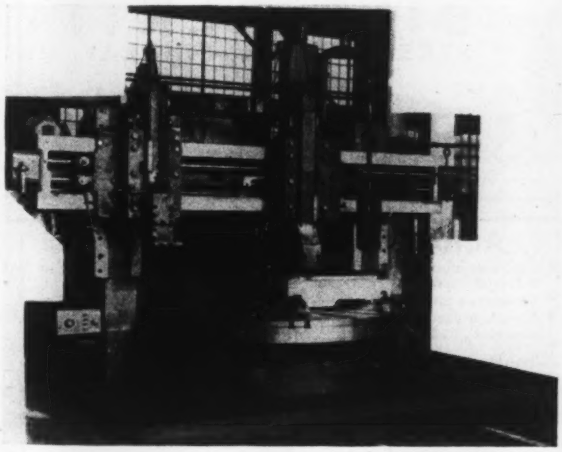

USED ONLY A FEW HOURS ON TANK TURRETS
3 BETTS 112" WIDENED TO 168"
HEAVY DUTY BORING & TURNING MILLS

Maximum swing 168"
Table diameter 108"
Max. distance top of table to tool holders 52"
Min. distance under tool holders 12"
Vertical travel tool ram 12"
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Range of feeds per revolution of table .002" — 7/16"
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Micrometer dials for horizontal and vertical tool adjustment
Verniers on ram and crossrail
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Table tracks submerged in oil at all times with oil pressure safety controls
Electrical Equipment for operation on 3/60/440 main drive thru generator to 40 HP 400/1500 RPM D.C. ball bearing motor
2 — 5 HP feed and rapid traverse motors
2 — ¾ HP coolant and lube pump motors
Generator for main drive consists of one 40 KW main motor generator, 2 feed motor generators & 1 — 60 HP drive motor
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Complete working drawings are available for conversion of these machines to standard boring mills, including housing designs, necessary feed screws and gearing.

If the full 168" swing is not required these mills may be reconverted to 112" very readily.

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With *Victor Steelrite Metal Marking Crayons,* you can mark hot, cold, damp or grimy metal *easily.* Withstands pickling and will not affect enamel application.

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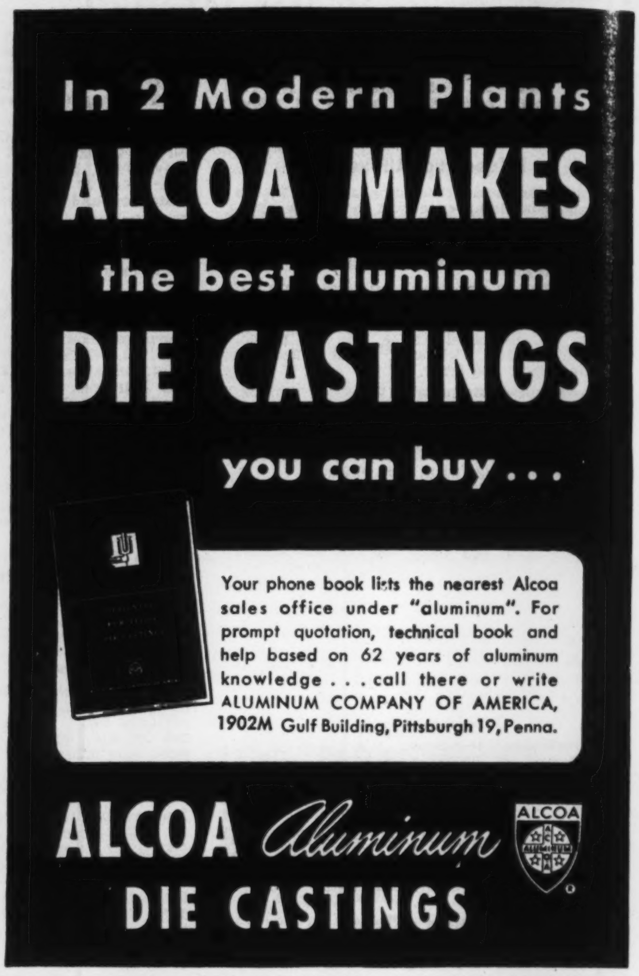

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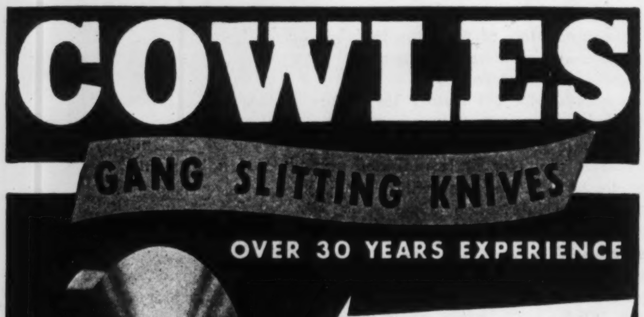

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CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Alabama

Harbison-Walker Refractories Co., manufacturer of fire brick, Pittsburgh, will expand its Bessemer, Ala., operations. It is reported that the company will build a tunnel kiln at the Bessemer plant. It now uses only the beehive type.

Alabama

Alabama Fuel & Iron Co.'s Acmar mine, an industrial landmark for many years in the Birmingham district, has been closed down. Overton mine, latest of three established by the company, was closed several years ago. Prince DeBardeleben, president, said Alabama Fuel & Iron Co. is liquidating, although its Margaret mine, last of the three, is still in production. A diminishing market for coal and greatly increased production costs are given as the reasons for the liquidation. The company at one time produced as much as 100,000 tons of coal a month.

Alabama

General American Transportation Corp., Chicago, acquired 20 acres of land in Birmingham. The company will start immediate construction of a plant there for production of storage containers for the petroleum industry, gas holders, large containers for the chemical industry, and related products. When General American's plans for the district are fully consummated, it is expected the company will produce tank cars and other products.

Alabama

Anniston Foundry Co., Anniston, Ala., plans construction of an addition to its building at a cost of $250,000. The new addition will up the plant's capacity to 70,000 tons a year.

California

Nelson Stud Welding Division, Morton Gregory Corp., Lorain, O., appointed Verne W. Bender as its regional manager for the western states. He will have his headquarters at the district factory branch warehouse being established in San Leandro, Calif. Mr. Bender will be assisted by field engineers in each of the principal Pacific Coast industrial areas. Al Bosley has been named field engineer for northern California; George E. Kennedy, for southern California with headquarters in Los Angeles; Western Oxygen Co., for Oregon and Washington. Victor Equipment Co. continues an authorized dealer in California.

Delaware

Bearing Locknut & Machine Co. Inc. was chartered by the secretary of state's office, Dover, Del. U. S. Corporation Co., Dover, is serving as the principal office.

Delaware

Tulsa Pipe Line Co. was chartered by the secretary of state's office, Dover, Del. Corporation Trust Co., Wilmington, Del., is serving as the principal office.

Illinois

Helstrom Corp., Franklin Park, Ill., awarded the general contract for a forge shop to Freevol-Smedberg, Chicago. Mayo & Mayo, Chicago, is the architect.

Kentucky

Green River Steel Corp. filed articles of incorporation in Owensboro, Ky., for establishment of an $8 million steel plant. Incorporators are Sidney D. Williams, Warren, O., and attorneys Robert B. Hensley and Frank A. Logan, both of Louisville. Proposed plans involve the erection of an electric furnace which would produce about 190,000 tons of high-alloy steel ingots a year.

New York

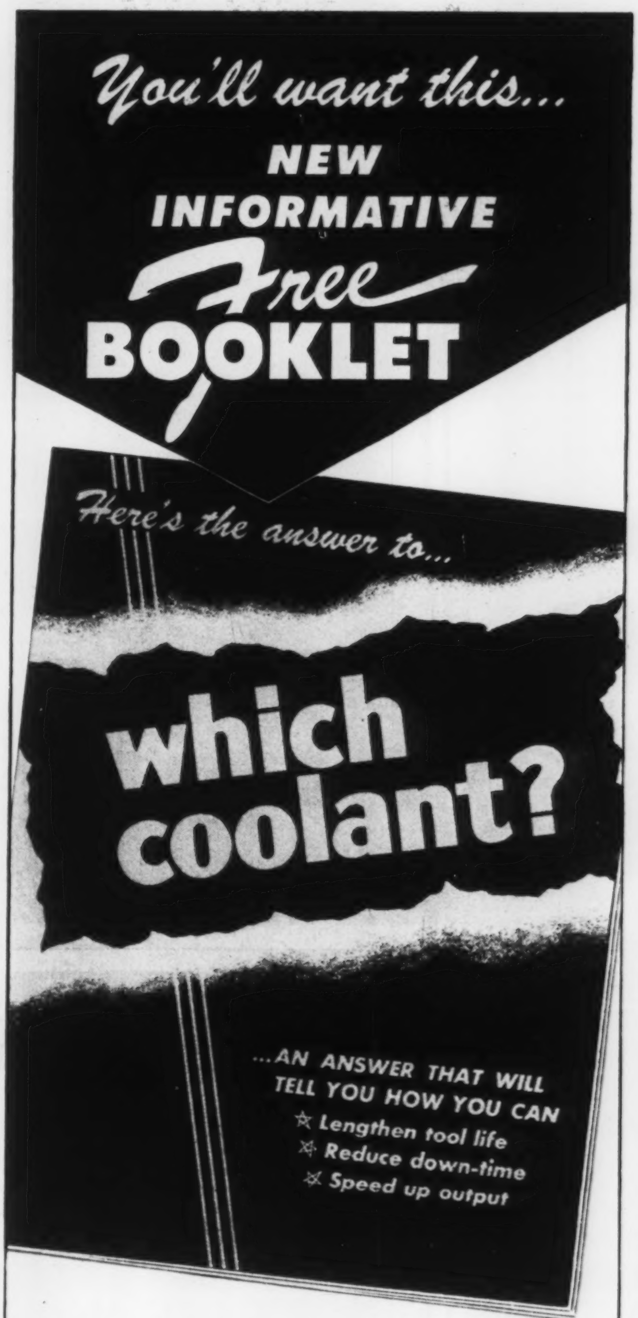
Laclede-Christy Co., St. Louis, appointed C. A. Gordon as a representative in Buffalo. He will have offices at 930 Prudential Bldg., that city.

Ohio

Columbia Metal Stamping Co., Cleveland, is planning to increase its plant facilities about 40 per cent through a $150,000 expansion program. In common with other metal fabricating firms, Columbia is harassed by shortages, but is augmenting its regular steel supply with blanks obtained from other fabricators and which in normal times would be scrapped.

Ohio

Damage suffered by the **Newport Steel Corp.,** Newport, Ky., as a result of the sudden collapse of an electric furnace containing 60 to 70 tons of molten metal, is estim-



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Ohio

Alliance Brass & Bronze Co. Inc. was incorporated in Akron by Ben W. Holub, statutory agent, Fred G. Cain and Faye Blair. The company plans to manufacture and distribute machine products and similar items.

Ohio

Morton Gregory Corp., Lorain, O., plans immediate expansion of the facilities of its Nelson Stud Welding Division in that city to increase production by at least 50 per cent. Construction will include a factory addition. Estimated cost of the job and equipment is $150,000. The addition will be completed by spring.

Ohio

Packard Electric Division of General Motors Corp., Detroit, purchased the Federal Machine & Welder Co.'s No. 4 plant in Warren, O. Packard will use the plant for overflow storage and future expansion.

Ohio

Superior Fabricating Co. expects to begin operations in its new plant in Niles, O., about Mar. 1, 1951. The new structure is being erected on recently purchased land adjacent to the site of the Niles Rolling Mill Co.'s plant. The new building will be used for light steel fabricating and storage of some steel items.

Ohio

Williams & Co.—specialists in alloys—is completing a $275,000 warehouse addition which will carry the company's facilities completely through the block from Perkins to Chester avenue, Cleveland.

Pennsylvania

Purchase of **R-S Products Corp.**, Philadelphia, by **S. Morgan Smith Co.**, York, Pa., manufacturer of hydraulic turbines and valves, was announced by Beauchamp E. Smith, president of the latter company. The Philadelphia concern is a leader in the fields of special valve and industrial heat-treating furnace production. Acquisition of the subsidiary will increase manufacturing capacity of the Smith company by about 10 per cent. Present management of R-S Products with W. E. Borbonus, president, and D. W. Hopkins, executive vice president, will be retained in the Smith subsidiary.

Tennessee

E. I. du Pont de Nemours & Co., Wilmington, Del., T. D. Bell, field project manager, let contract to Forcum-James Co., Dyersburg, Tenn., for a $7.5 million sodium cyanide plant to be built near Memphis, Tenn.

Tennessee

Tennessee Products & Chemical Corp., Nashville, Tenn., plans to build a chlorine manufacturing plant, to cost about $3 million, near Chattanooga, Tenn. Carl McFarlin is president of Tennessee Products.

Texas

General offices of **Baroid Sales Division**, National Lead Co., New York, including the sales, administrative and research departments, will be moved in 1951 from the Los Angeles headquarters to Houston, Tex. The Baroid division makes products for drilling muds used in connection with the drilling of oil wells. Contracts have been let to construct a headquarters building in Houston, with completion scheduled for July 1 occupancy. Houston has been headquarters for Baroid's Gulf Coast Division.

West Virginia

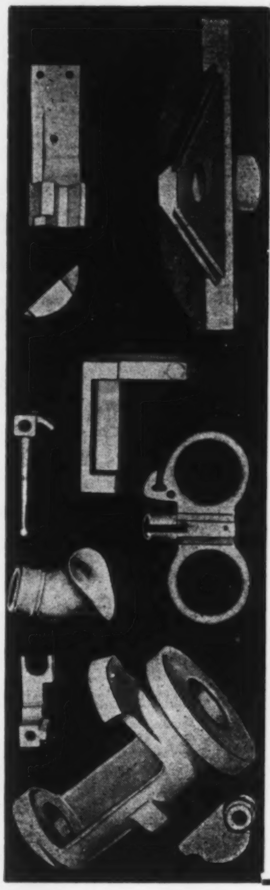
Eriez Mfg. Co., Erie, Pa., appointed Engineering Products Co., Charleston, W. Va., as sales representative for its full line of magnetic separation equipment, including RCA electronic metal detectors. George Garrett, electrical engineer and former chief engineer for E. I. du Pont de Nemours & Co., and Ralph Crump, mechanical engineer, are members of the sales force for Engineering Products Co. F. E. Anderson, chemical engineer, is general manager of the latter company.

Canada

Greater Vancouver, B. C., Water District authorized construction of Capilano dam, an $8,350,000 project. Bids will be received early in 1951. Chief Commissioner A. E. Cleveland plans early purchase of 1600 tons of reinforcing bars, plates and shapes; at a later date, gates, pipes, machinery, etc.

Canada

Preliminary bids will be called soon for a proposed $2,550,000 plant for **Sick's Capilano Brewery Ltd.**, Vancouver, B. C. Project will involve expenditure of $1.8 million for machinery and equipment. Plans are in preparation by Don McRoberts, that city.



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